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Bulletin

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# The Journal of the American Medical Association

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## INDUSTRIAL POISONS ENCOUNTERED IN THE MANUFACTURE OF EXPLOSIVES


ALICE HAMILTON, M.D.

CHICAGO


Accidental explosions are so great a danger in the industry of making explosives that they overshadow the less spectacular but quite as real danger of industrial poisoning. The outbreak of the great war was followed in Great Britain by a rapid increase in the notifications of occupational poisoning from certain substances as a result of the enormous increase in the manufacture of ammunition of all kinds. What the experience of France and of the Central Powers has been we do not know, but there is no reason to suppose that they have escaped this natural consequence. Nor is there any reason to suppose that we have escaped it, since we too began to increase greatly our production of the ordinary explosives soon after the war broke out, and also to manufacture quite new ones. Consequently, it seemed desirable to learn whether here too this industry has been attended with a serious amount of poisoning, and the United States Bureau of Labor Statistics asked me to make a study of it. I visited forty-one plants in which all sorts of explosives are made except ordinary gunpowder, black powder, for its manufacture does not involve exposure to poisonous fumes or dusts. Shrapnel plants also were omitted, because shrapnel consists of steel receptacles filled with bullets and black powder. The important explosives for such a study as this are nitrocotton, smokeless powder, picric acid, trinitrotoluene, fulminate of mercury, nitroglycerin and the mixed nitroglycerin powders, and some rarer, less used explosives, belonging to the nitro-aromatic series.

In these forty-one plants there were about 30,000 persons employed in work exposing them to poisons of various kinds. Only a minority were women, about 1,100, and of these only forty were doing work which involved serious risk. This, of course, is in great contrast to foreign munition works, in which the majority of the work is done by women, and in all probability women will from now on be employed in increasingly large numbers in our plants, for much of the work is such as women can do perfectly well. There were also few lads employed in this industry, in which carelessness may result so disastrously. But this is another feature which will probably change now.

At the time this study was made, between April and December, 1916, the industry was already large and important. The poisons to which workers are exposed are unfamiliar in this country, and it seems timely to describe them, the processes in which they are encountered, and the effects they may be expected to produce. After the war is over these plants will continue to operate, even if disarmament should follow, for there are many uses to which they can be put. The guncotton factories can produce celluloid, lacquers, artificial leather and photographic films; the picric acid plants can make dyes; trinitrotoluene can be used as a peace explosive. In addition, the compounds which have been produced for this manufacture will continue to be produced for other purposes. We shall continue to distil benzene and toluene and to make phenol (carbolic acid) long after the demand for explosives is over, so that this is not to be regarded as a temporary industry which need not demand much attention because the dangers connected with it will not last long. It has become a permanent part of our industrial life.

To discover how much illness has resulted from this kind of work is difficult; indeed, it is impossible to get full, accurate figures. Superintendents naturally hesitate to give information that may seem to put their employers in a bad light, and the company physician is often quite as unwilling. In other cases, the physician with the best will in the world cannot give usable information, because he has not the habit of keeping records and can only say vaguely that he has sometimes seen as many as twenty cases of "fume sickness" on a hot night, or that he remembers a man who died in the hospital but he was not sure what killed him, so he called it pneumonia. There were only twenty-eight factories from which trustworthy data could be secured, and I found that in those twenty-eight there had been during the preceding year a little more than 2,500 cases of industrial poisoning, with fifty-three deaths. I am quite sure that this figure is less than the truth, for many cases fail to be recognized by the ordinary practitioner.

These 2,500 persons were not all seriously poisoned. There were 111 who had nothing worse than a fulminate rash; there were 205 cases of mild anilin poisoning. But with the exception of these, the form of poisoning was always fairly serious and sometimes very serious. The 2,500 were divided as indicated in the accompanying table.

It will be noted that nitroglycerin, which has been manufactured for many years in this country, has not a single case to its credit, while benzene and toluene have proved very dangerous, and trinitrotoluene, a new explosive in America, is responsible for more trouble than any substance except the nitrogen oxids so commonly evolved in nitration works. The other substances were responsible for only a few deaths.

### MANUFACTURE OF EXPLOSIVES

There is always danger of nitrogen oxid fumes in the manufacture of explosives, because they are

nitrated products and the processes of nitration are accompanied by the production of these fumes, which give rise to what is commonly called "fume sickness." Haldane states that mice die after half an hour in an atmosphere containing 0.05 per cent. of nitrogen oxids. The danger is greatest in the nitration of cotton to nitrocellulose, and in the nitration of phenol to picric acid, trinitrophenol.

### NITROCELLULOSE

Cotton which has been previously purified and finely divided is mixed with acids and allowed to digest till the change to nitrocellulose has occurred. The acids are nitric — which is sometimes used in 100 per cent. strength — and sulphuric acid, the latter being added to take up the water liberated in the reaction which otherwise would dilute the nitric acid. When nitration is complete, the cotton is transferred to a centrifuge — called a wringer — and the acid removed, after which it is "drowned," that is, dropped into a large tank of water and washed thoroughly. It is in the wringing and drowning that the greatest danger of fumes arises. If the acid is not strong enough, the cotton matted or not thoroughly cleansed, or if a few drops of water find their way into the wringer, there may be a rapid decomposition with an evolution of nitrogen oxids so violent that the lid of the wringer is sometimes blown off, the acid splashed about, and

SOURCES OF POISONING

| Poison | Men | Women | Total | Fatal Men | Fatal Women | Fatal Total |
|---|---|---|---|---|---|---|
| Nitrogen oxid | 1,389 | .. | 1,389 | 28 | .. | 28 |
| Trinitrotoluene | 660 | 43 | 703 | 11 | 2 | 13 |
| Benzene | 14 | .. | 14 | 7 | .. | 7 |
| Nitrobenzene and toluene | 12 | .. | 12 | 1 | .. | 1 |
| Ether | 52 | .. | 52 | 1 | .. | 1 |
| Phenol | 2 | .. | 2 | 1 | .. | 1 |
| Mixed acids | 2 | .. | 2 | 1 | .. | 1 |
| Sulphuric acid | 4 | .. | 4 | 1 | .. | 1 |
| Picric acid | 7 | .. | 7 | .. | .. | .. |
| Anilin | 205 | .. | 205 | .. | .. | .. |
| Fulminate | 79 | 32 | 111 | .. | .. | .. |
| Ammonia | 1 | .. | 1 | .. | .. | .. |
| Mercury | 1 | .. | 1 | .. | .. | .. |
| Nitronaphthalenes | 2 | .. | 2 | .. | .. | .. |
| Chlorin | 3 | .. | 3 | .. | .. | .. |
| Total | 2,433 | 75 | 2,508 | 51 | 2 | 53 |

the whole room filled with a fine spray of atomized acid as well as fumes. Such an accident results not only in fume poisoning but also in severe burns if the workmen are anywhere near. In drowning, the fumes are not so heavy, and there is not the danger of acid burns.

The higher the nitration, the greater the danger. Highly nitrated cotton is used for military guncotton, for the making of the so-called nitroglycerin powders, such as ballistite and cordite. We are manufacturing ballistite for our own use and cordite for the British. Both are mixtures of high nitration nitrocotton and nitroglycerin. Cotton of lower nitration is used for the manufacture of smokeless powder, and a still lower variety for celluloid and lacquers and photographic films.

I am told that improvements in technic have lessened the number of such fires, as they are called, in cotton nitration works since I visited them last summer and fall. At that time they were so frequent as to arouse no comment at all. Eight times during a visit to one large works I saw the angry, orange yellow fumes come pouring out, the workmen fleeing before them, and the general suspension of work till the air had had time to clear. The workmen become accustomed to the fumes in great measure, and I have been choked and blinded and speechless in an atmosphere that seemed to cause them no discomfort. There is, however, no real immunity to nitrogen oxid fumes. Old hands (any one who has worked as long as eight months in the explosive industry is an old hand) may succumb as quickly as new ones to an unusually severe exposure.

*Cases of Poisoning from These Compounds.*—The list given in the tables begins with 1,389 cases of poisoning from nitrogen oxids (995 from nitrocotton plants, 381 from picric acid, and thirteen from nitric acid works). These varied all the way from light to fatal. In light cases, the man "chokes up," the irritation of the fumes causing a spasmodic contraction of the bronchi such as takes place in bronchial asthma, and, indeed, the attack much resembles an asthmatic seizure. Often there is cramplike pain in the abdomen as well. These symptoms are relieved by the usual first-aid remedies, chloroform shaken up in water, and often the man can go back to work on the same shift, though it is considered safer to send him home to bed. Severe and fatal cases present the same picture as the gassed soldiers from the trenches. British and French medical journals have been full of the symptomatology and pathology of chlorin poisoning as it is seen at the front, and their descriptions would fit accurately the industrial nitrogen oxid cases in our explosive works. There is the same tardy onset of serious symptoms, the man usually going home in fair condition and some hours later developing intense and increasing dyspnea; the same gastric symptoms, which are, however, often masked by the much more distressing air hunger; the same gradual filling up of the lungs with fluid which usually results in death. Among the twenty-eight deaths from nitrogen oxid poisoning on my list, sixteen were from edema of the lungs.

There is not much fear that such a case would fail of recognition, but the less violent poisoning which results in various forms of pneumonia often passes for ordinary nonoccupational sickness. This is even more the case with slowly developing inflammations of the lungs, or a recurrence of pneumonia some weeks after the original trouble. In a hospital not far from a large cotton nitration works I found the record of a young man who was exposed to an unusually large amount of nitrous fumes, recovered from the immediate effects, and then for three days suffered from headache, but without any lung involvement. On the fourth day he was taken ill, and signs of consolidation of the lung developed rapidly. He was taken to the hospital, where the diagnosis of acute miliary tuberculosis was made, but after death his lungs were found to be gangrenous. Evidently this was a secondary effect of the original injury sustained from the acid fumes. Other instances of pneumonia, sometimes fatal, were related to me by physicians who knew the nature of the processes carried on in the plants and could interpret the dangers to which the men were exposed; but many others had never thought of inquiring as to the men's occupations, and it was only when I questioned them that they began to think back and wonder whether or not the pneumonias they had seen were of this class.[1]

1. J. N. Hall and C. E. Cooper (The Effects of the Inhalation of the Fumes of Nitric Acid, THE JOURNAL A. M. A., Aug. 5, 1905, p. 396) followed the subsequent history of a number of firemen who had breathed enough nitrogen fumes to affect them seriously. Two who recovered from the immediate effects died of pneumonia four and five weeks later. A necropsy on one of these showed bronchopneumonia with early fibrous change in the solid areas. Fraenkel has described a case of bronchiolitis obliterans in a man who died in the third week after he had inhaled nitrogen oxid vapors.

Another often unrecognized form of nitrogen oxid poisoning is even more rapidly fatal than pulmonary edema. Here the poison seems to act directly on the nervous centers, and the changes found after death are comparatively insignificant. For instance, a foreigner applied for work during the heat of last summer in a picric acid plant where the fumes are unusually bad and very little attention is paid to the safety of the men. He went on with the night shift, and at 4 in the morning he was found lying unconscious in the yard. An ambulance was sent for but he died before the hospital was reached. The necropsy showed only a slight congestion of the meninges, some congestion of the lungs, the heart empty, and the blood fluid and dark.

Fortunately we have a more carefully worked up postmortem examination of this form of nitrogen oxid poisoning. Dr. George Apfelbach of the Illinois Factory Inspection Department had the opportunity to examine the body of a man who, like the one just described, died during the first shift of work. This was in a cotton nitration works on a very hot night, but the fumes from the acid were not bad enough to make any of the other men apply for treatment at the company dispensary. He had worked only about four hours, when he went out saying that the fumes were too much for him, immediately became unconscious, and died in about half an hour. Dr. Apfelbach found the lungs congested; the alveoli containing frothy fluid; the bronchi, trachea and larynx reddened; the kidneys, brain, heart, stomach and intestines absolutely negative; the spleen congested, and the blood fluid, not clotting, and dark in color. A sample of the blood was submitted to Dr. William D. McNally of the coroner's office of Cook County, who found no methemoglobin, but did find the blood slightly acid and containing traces of nitric oxid.

Among the twenty-eight deaths from nitrogen oxid poisoning on our list, sixteen were from pulmonary edema, five were of this extremely rapid form, and seven were from pneumonia.

Inflammation of the throat is not rare, and is occasionally serious. I have records of three cases of laryngeal edema, in one of which intubation had to be performed. This man did not realize that the fumes had injured his throat until about six hours later, when pain and swelling began and increased, and he had to be sent to the hospital for the dangerously increasing dyspnea.

We do not know what are the effects of long continued exposure to these vapors, beyond the fact that they act on the enamel of the teeth, so that men on the nitration area soon lose their front teeth. The wire screening in the windows of company hospitals soon rots away; the men wear pure wool shirts because cotton will not last at all, but even the thread in the seams of shirts rots away and the garment falls apart. It seems incredible that acid strong enough to attack metal and enamel should be without any effect on the mucous lining of the respiratory tract, yet I have not been able to find any evidence of chronic trouble. This is perhaps explained by the continual labor turnover, which is great in all departments of a munition plant, but always greatest in the nitrating areas.

After the cotton is nitrated there is no further danger of poisoning in a nitration works, for the washing and purifying is quite harmless. The next step is the conversion of nitrocotton to smokeless powder or mixed powders; but this is usually carried on in another plant and will be described later, as it involves quite different poisons. The explosive that follows logically after nitrocellulose is picric acid, for its manufacture gives rise to a great deal of nitrogen oxid fume poisoning, more, I believe, in proportion to the men employed, than does the making of nitrocotton.

### PICRIC ACID

This is chemically trinitrophenol, and is made by the action of mixed acids on phenol (carbolic acid). It is itself a poison, and so is phenol; it follows, therefore, that while in a nitrocotton works only a minority of the force are exposed to occupational poisoning, in one making picric acid, almost all are so exposed.

The making of picric acid seems to be comparatively simple and can be carried on with a primitive equipment. The consequence is that soon after the beginning of the war many picric acid works were started in abandoned factories or hastily constructed plants, and the production was rushed in a most reckless fashion in order to fill war contracts. The worst conditions I saw anywhere were in picric acid works, not only in the small plants, but also in large establishments employing some thousands of men. The moment the mixed acids meet the phenol, there is an evolution of nitrogen oxid fumes, and if nitration is done in partly open receptacles, and hand stirring required, and if no adequate exhaust system has been installed, there may be at times a condition inside the nitration sheds that is a menace to life. Unfortunately it is in just these recklessly managed plants that medical care of the men is poorest, and provision for personal cleanliness most insufficient.

A further danger in this industry is the handling of picric acid, especially if it is dried down to less than 1 per cent. of moisture, when it becomes very dusty to handle. As a usual thing it is shipped with 10 per cent. of moisture left in. Men who handle it and get dusted over with it suffer from a dermatitis which may be extremely irritating, as I can testify from my own experience after a visit to a drying house one hot day last July. The better managed companies take pains to protect their men by baths and changes of clothing, but in the newer plants "picric itch" is taken as a matter of course.

Systemic poisoning from picric acid has been known to the French for some time[2] because the favorite high explosive of the French, melinite, consists chiefly of picric acid. The British picric acid mixture is known as lyddite. There are not many cases of picric acid poisoning to be found in our plants, perhaps because this compound is slowly absorbed and labor in these places changes rapidly, the turnover being truly enormous in some of them. A few instances were related to me of symptoms such as the French describe, abdominal cramps, vomiting, diarrhea, loss of appetite and loss of weight, leading the man to quit work for fear of serious consequences.

An unusually severe form was described by Dr. T. F. Harrington of the Massachusetts Board of Labor and Industry:

> Two men spent Sunday repairing leaky ducts in the building in which nitration of phenol was carried on. The next day, one of them began to feel very weak, his pulse was small and irregular, he was pale with a slight bluish tint, and he had headache and dizziness and palpitation of the heart. The other man went to the company physician on Friday complaining that he had felt ill ever since his Sunday's job, had been unable to eat, had nausea, headache, cough and difficulty

2. Chéron: Jour. de thèrap., 1880, p. 121.

in breathing on slight exertion, and that he felt dull and confused and very weak. These men lost two and three weeks from work.

### PHENOL

The synthetic preparation of phenol, $C_6H_5OH$, consists in sulphonating benzene, forming benzene sulphonic acid, $C_6H_5SO_2OH$, and then alkaline fusion by which the OH group is introduced in place of the sulphonic acid group.[2] The greatest danger in this work has already been spoken of, fumes of benzene. Phenol burns are common; systemic poisoning seems to be rare.

A fatal case was reported by Dr. T. F. Harrington, of a young chemist who stepped into a pool of phenol waste and soaked his leg in it. Soon he began to complain of ringing in the ears, dyspnea and dizziness. Then he became dazed, excited and almost hysterical. He was allowed to leave the building in this condition, but evidently he soon lost consciousness, for the next morning he was found dead on the road. The leg was then greenish black up to the knee.

### BENZENE[3] AND TOLUENE,[4] OR METHYLBENZENE

These two may be considered together, since their toxicity is about equal and the symptoms of poisoning much the same. Benzene is third on my list of poisons, and just half of the cases were fatal. This is partly because slight poisoning from benzene passes over quickly and excites little attention and the cases are not remembered. All those reported to me were serious.

Benzene and toluene are poisons with: (*a*) a specific action on the nervous system, leading to dizziness, confusion, transient excitement followed by dulness, muscular twitchings, stupor, coma, respiration rapid then slow, pulse rapid and temperature subnormal; (*b*) the production of multiple hemorrhages through a solvent action on the capillary endothelium, or through the lodgment of fat emboli, causing rupture of the capillary wall,[5] and (*c*) changes in the constituents of the blood, the most striking of which is a leukopenia.

Of the seven deaths from benzene on my list, five occurred in connection with repair work in or round a still. The other two patients were engaged in sulphonating benzene for the synthetic production of phenol. All were sudden, sometimes shockingly sudden. Thus one man went to the top of a still to stop a leak, was overcome, and died in less than five minutes' time, while two fellow workmen who went to his assistance were also overcome and with difficulty revived. In another case, the men were inside the still, which was supposed to be free from benzene, became excited and then stupified, and were pulled out quite unconscious; the one who had been in longer was revived with oxygen, and the other died.

I am indebted to Dr. H. S. Martland, pathologist of the Newark City Hospital, for the records of two necropsies performed by him on men who died from benzene poisoning as a result of inhaling fumes in the sulphonating room of a phenol works. One was found dead beside the "liming vat" into which the sulphonated benzene — doubtless carrying some unchanged benzene with it — flowed, and because of the heat was volatilized at once; the other was found dying near the benzene supply pump in the same room. Dr. Martland found in the first: cyanosis of the liver, spleen and kidneys, dilatation of the right heart with dark blood, pleural ecchymoses, and small areas of acute interstitial emphysema in the lungs. In the second man the changes were similar, but here a decided odor of benzene was perceived when the lungs were sectioned, and there were tiny hemorrhages into the pleurae and pericardium. The urine contained an abnormal quantity of phenol, but no benzene.

### NITRO AND AMIDO DERIVATIVES OF THE BENZENE RING

There are several of these compounds made for use as explosives, and others that are steps in the production of explosives. Most important of the former is picric acid, already described, and trinitrotoluene (triton or T. N. T.); less important are the nitronaphthalenes, diphenylamin or diamidobenzene, tetranitranilin (T. N. A.), and tetranitromethylanilin (tetryl). For the production of explosives, we find nitrobenzene and amidobenzene or anilin, chlorobenzene and dinitrochlorbenzene.

These compounds have certain characteristics in common, but cases of industrial poisoning from different members of the group vary quite a little. Curschmann[6] believes that the higher the nitration the greater the toxicity; but sometimes the lower nitrations are more volatile or more easily absorbed through the skin and therefore in actual practice more dangerous. It must also be remembered that these explosives are often not chemically pure. Crude trinitrotoluene may contain not only dinitrotoluene, but also the far more poisonous dinitrobenzene, if the toluene contained an admixture of benzene.

Briefly described, the symptoms typical of poisoning by this group depend on a direct action on the nerve centers, respiratory, heat regulating and vasomotor, and on changes in the elements of the blood, the most important of which are the formation of methemoglobin and the destruction and subsequent regeneration of red corpuscles. Some would ascribe all the symptoms to the presence of methemoglobin, but Heubner[7] has shown that they may be produced in rabbits before methemoglobin is formed, through action on the lower centers, death occurring from respiratory paralysis.

The volatile compounds, such as anilin, nitrobenzene, diphenylamin (used as a constituent of smokeless powder) and nitrochlorbenzene, produce their effects rapidly. The following case is typical of nitrobenzene poisoning:

The man had been exposed to fumes of nitrobenzene and had become dizzy and faint, so that he was obliged to go out into the open air. His face, which had been flushed, grew cyanotic, his distress increased, and a severe throbbing headache came on, the pulse became rapid and small, and respirations quick and shallow. He was taken home and put to bed where he soon lost consciousness. He lay in stupor, deeply cyanosed, almost pulseless, for several hours; then convulsions came on, and he died in less than twenty-four hours after the beginning of the attack.

Blood drawn during such an attack is chocolate colored, but methemoglobin may not be demonstrable till later unless the red corpuscles are dissolved in water.[8] Hudson[9] finds quite constantly in nitrobenzene poisoning an early leukocytosis soon changing

3. Rambousek (Concordia, 1910, p. 448) thinks benzene the more toxic.
4. Lehmann (Arch. f. Hyg., 1911, **74**, 1) finds that narcosis from toluene is more rapid and lasts longer.
5. Santesson: Arch. f. Hyg., 1897, **31**, 336.
6. Curschmann: Internat. Cong. Indust. Hyg., Brussels, 1910.
7. Heubner: Zentralbl. f. Gewerbehyg., 1914, **2**, 409.
8. Roth: Zentralbl. f. inn. Med., 1913, **34**, 417.
9. Hudson: Med. Rec., New York, 1917, **91**, 89.

to a pronounced lymphocytosis, and destructive changes in the red blood cells. The urine is dark and contains urobilin, but no hemoglobin nor bilirubin.[10]

Nitrobenzene causes fewer cases of poisoning than anilin, but the cases are of a severer type. In the explosives industry I did not find serious trouble from anilin. There is a good deal of poisoning of a mild type in the one factory in which I found nitrobenzene being reduced to anilin and the latter used for the production of explosives, but the men are well protected against serious poisoning. It seems not to be so dangerous to breathe anilin fumes as to spill the oil over the skin, and in this plant such an accident is always followed by prompt stripping and bathing. Of course we shall probably begin to have chronic anilin poisoning as the Germans have described it, profound anemia simulating valvular heart disease, with its dyspnea and cyanosis. We ought also to be watching for the bladder tumors which the Germans have found to be unduly common among anilin workers.

The local effect of some of these compounds on the skin is much more pronounced than in the case of others; indeed, the irritating dermatitis caused by picric acid is so common as to constitute typical picric acid poisoning in the eyes of powder works physicians, while anilin gives little trouble of this sort. A more or less deep yellow staining of the skin and hair is caused by most of them. Picric acid workers are the most deeply dyed and are usually called "canaries" by the countryside. Trinitrotoluene causes a less vivid stain, tetranitromethylanilin a stain with a greenish tint. This yellow color is so conspicuous as to confuse the inexperienced and lead in some cases to a diagnosis of jaundice.[11]

The confusion is increased by the fact that the staining of the skin is not only a mechanical effect of contact with the dye, but is in part caused by its deposit in the deeper layers. White[12] experimented on himself with trinitrotoluene, which he rubbed into the skin of the arm, and a yellow color appeared under his nails. In the same way the sclera may turn yellow when there is no jaundice.

Dermatitis is said to be most severe from dinitrochlorbenzene, next from tetranitromethylanilin, then from trinitrotoluene, and then from picric acid.

### TRINITROTOLUENE

Usually the cases of poisoning from trinitrotoluene do not conform to the type given above, for absorption takes place more slowly and there is time for degeneration in the parenchymatous organs. This may be true even of more volatile compounds than trinitrotoluene. In 1906 a case was reported in England of a man who died of acute yellow atrophy of the liver from nitrobenzene poisoning, but it is much more common in connection with trinitrotoluene. The British factory inspection reports now contain a new occupational disease, toxic jaundice. In answer to a question in the House of Commons last September, a member of the government said that there had been in the previous nine months 120 cases of toxic jaundice, with thirty-three deaths, and of these, ninety-five with twenty-eight deaths had been caused by trinitrotoluene, and the others by that new industrial poison used in aeroplane "dope," tetrachlorethane.

There are 703 cases of trinitrotoluene poisoning on my list, with thirteen deaths. I should have added six more deaths, had it not been for my rule not to include a case unless it was reported by the physician who saw it. These came to me at second hand, and first hand information was refused.

Trinitrotoluene is a new explosive in this country, though a plant in northern Wisconsin has been making it for some years. Even in England it was unknown before the war, for nitrobenzene had been used instead. Now it is made in great quantities, since it is the chief constituent used in high explosive shells, together with a detonator of fulminate of mercury with perhaps some tetranitranilin. There is, I believe, less danger of poisoning in the nitrating of toluene than in the subsequent handling of the trinitrotoluene, and the danger from nitrogen oxid fumes in nitrating seems to be slight. It is in the melting, pouring, pressing, boring and planing of the charges for shells that the greatest number of cases occur. There are both dust and fumes in this sort of work, sometimes to an excessive degree, especially in the boring process, when the detonator hole must be made in the solid charge. Even small amounts of dust may be dangerous. I found a woman suffering from a severe form of toxic hepatitis whose work had been weighing charges and scraping off with scissors a little of the trinitrotoluene if the charge was too heavy. She sickened after only five weeks' employment.

Typical trinitrotoluene poisoning is not rapid. The British show that 83 per cent. of their cases of jaundice have occurred between the fifth and sixteenth weeks of work.[13] I might cite the following cases from among those reported to me, as typical of various forms of trinitrotoluene poisoning. The first was only moderately severe:

> The man was employed on a machine for boring detonator holes in trinitrotoluene charges, and the shield that was supposed to hold the dust produced in boring was broken, so that he had to breathe contaminated air. He began to have an obstinate cough after three weeks' work, and expectorated yellow mucus which would stain water yellow. Later he was put into the molding room where trinitrotoluene is melted in great, partly open kettles, and fumes escape. By this time he felt very ill and attributed it to the fumes, which seemed to give him headache, nausea and even vomiting. He had pain about the navel and in the joints. At night the joints were swollen, especially the ankles. His headaches increased in severity, he had no appetite, and grew so weak that he was obliged to quit work.

This man paid several visits to the company physician, who regarded the symptoms as unimportant and sent him back to the same sort of work. British authorities emphasize the great risk of doing this, for at any moment a slight case may develop into one rapidly fatal. They attach importance to such symptoms as a persistent cough due to no known cause, unaccustomed shortness of breath, fatigue not explained by exertion, and pains coming on suddenly in the feet and legs. These persons should at once be shifted to safe occupations. That this may not

10. Mohr: Deutsch. med. Wchnschr., 1902, **28**, 73.

11. We read that, in the British and French armies, soldiers who want a leave of absence sometimes take a small dose of melinite, which makes them vomit, suffer from cramps and diarrhea, and finally turn yellow, simulating in every way, except for clay-colored stools, an attack of hepatic jaundice.

12. White: Lancet, London, 1916, **1**, 400.

13. Lancet, London, Dec. 16, 1916.

be enough to save the patient is shown by the history of one of my patients:

A girl, aged 19, for some months had been dipping trinitrotoluene charges in melted paraffin, and then she was sent to work in the office. It was after she had left the trinitrotoluene department that she developed symptoms of poisoning. At first they were slight, nausea and constipation without jaundice, but they increased rapidly, persistent vomiting came on, deep jaundice, complete suppression of urine, and death after twelve hours of coma.

Two cases of the same kind in men were reported from another factory. Both patients had symptoms typical of acute yellow atrophy of the liver, vague discomfort and a feeling of weakness, then marked gastro-intestinal disturbance, griping pains across the abdomen, increasing jaundice, fever, dropsy, delirium, coma and death. There were also petechial hemorrhages over the body.

No necropsies were performed in any of these cases, but Martland[14] has recently published the record of such an examination of a fatal case of trinitrotoluene poisoning, and also of one that presented a picture of aplastic anemia.

Less typical forms of trinitrotoluene poisoning occur when there has been a massive exposure to the poison. Three instances of this were related by Dr. T. F. Harrington but one will suffice to illustrate this class of cases:

A man, aged 42, employed as a carpenter in a building in which toluene is nitrated, became dizzy from the fumes from a duct near which he was working. He went out into the air and revived, but when he tried to resume work the dizziness returned and he was obliged to quit and go home. The next morning he came back, but as soon as he reached the place at which he had been at work the day before, he was overcome with faintness and nausea and had to be helped out of the building, when he began to vomit. It was a 2 mile drive to his home, and the fresh air revived him somewhat; but the next day he felt chilly and suddenly became very ill, had convulsions, and died about midnight. As the cause of death the coroner's report gave "red cell destruction and secondary oxygen starvation, especially of brain and nervous system; general congestion of organs."

According to British authorities, women are no more susceptible to trinitrotoluene than are men, but the immature worker of either sex is decidedly more susceptible than the mature. These authorities advise forbidding the employment of persons under 20 years of age, since they have discovered that while the general mortality from toxic jaundice, recognized as such, was 33 per cent., among the eleven patients who were under 18 years of age, no less than eight died.

### OTHER POISONS

*Tetranitromethylanilin and Tetranitranilin.*—These are powerful explosives, used to an increasing extent in Europe as constituents of detonators, but so far too expensive in this country to meet general use. Their manufacture involves the danger that inheres in such compounds as anilin, methyl alcohol and nitric acid, and they are poisons belonging to the nitro-aromatic group. I did not find any trouble among workers with these substances, except a rather distressing dermatitis among the men drying and packing tetranitromethylanilin.

*Fulminate of Mercury.*—Mercury is digested with nitric acid, and the resulting nitrate is mixed with alcohol, during which latter process there is a lively evolution of fumes of complicated composition, the most important constituent being ethyl nitrite. There is some risk of mercurial poisoning—I was told of one case of salivation—and the ethyl nitrite fumes may be strong enough, especially in hot humid weather, to make work almost intolerable; but there seems to be no serious depression from it.

Fulminate is extremely explosive and is the essential part of percussion caps and detonators. There are several thousand men and women employed in making caps and detonators in our munition plants. Apparently, from German reports, mercurial poisoning is not unknown among such workers. Not long ago Oppenheim[15] reported cases of fulminate dermatitis from Austrian works, and among thirteen there were eight with "stomatitis mercurialis." The British Health of Munition Workers Committee found mercurialism from this source rare, but the occurrence of anorexia, headache, nervousness and depression among fulminate workers may be attributable to this element.

It is well to bear in mind the possibility of this form of industrial poisoning in fulminate workers, for at present the only kind recognized by American physicians seems to be the dermatitis, which is quite common. I found it more prevalent among men than among women, probably because women dread a disfiguring eruption more than men do and take more pains to protect themselves. Among 1,070 women working in one plant, only thirty-two had had skin lesions as a result of handling the fulminate, while thirty-six of the 505 men had had them.

*Smokeless Powder.*—This is not a powder at all, nor are the so-called nitroglycerin or mixed powders. They resemble in appearance chopped brown macaroni or spaghetti or vermicelli, with many tiny canals running the length of the string. In order to make these powders, nitrocotton is dehydrated and then changed to a rubber-like consistency by mixing with some partial solvent, ether-alcohol, or amyl acetate, or a mixture of nitroglycerin and acetone. Then the rubbery mass is pressed through macaroni machines and the cords cut into proper lengths, during which a great deal of the solvent evaporates.

*Ether-Alcohol.*—Ordinary smokeless powder, not cordite or ballistite, is made by driving the water out from nitrocotton by alcohol in a hydraulic press. So far as I have seen, the alcohol used is always ethyl. In making celluloid, large quantities of methyl alcohol may be used, but not in powder work. The alcohol fumes may be very strong at times, but the real trouble comes from the ether, especially in the pressing and cutting department, in which the temperature must be kept at from 85 to 95 F.

Acute ether intoxication, "ether jag," is so usual as to be taken as a matter of course. New hands suffer almost always, and some men cannot become accustomed to it. They pass through all the stages of anesthesia, excitement, with loud laughter and singing or unreasonable anger, and then increasing dulness, so that by the time the company physician sees them they are usually already somnolent. They are put to bed and the next day they have headache, more or less nausea and general discomfort. Most company physicians refuse to believe that the ether has any further effect, or that systemic symptoms are to be expected after long exposure to it; but it is not difficult to find instances of men who have had to quit work because of chronic indigestion, constipation, loss of weight and strength,

14. Martland, H. S.: Trinitrotoluene Poisoning, The Journal A. M. A., March 17, 1917, p. 835.

15. Oppenheim: Wien. klin. Wchnschr., 1915, **28**, 1273.

and loss of appetite because of the continual taste of ether in the mouth.

Nephritis also is noted by some physicians as a possible result, and one company physician is careful to shift to other work men who show any symptoms of kidney involvement. The fatal case of ether poisoning on my list was one of uremia, but the man was a syphilitic and doubtless had damaged kidneys when he went to work.

Sometimes the narcosis is profound and is accompanied by signs of irritation in the lungs, which may develop into a bronchopneumonia. Since diphenylamin is added to many of these smokeless powders, one should remember that the symptoms of an amidobenzene may be also present in poisoning from this solvent.

In 1910, Sand[16] presented the results of experiments on dogs with ether-alcohol fumes. His findings are significant in connection with the possible chronic poisoning of these ether workers in explosive manufacture. The ether-alcohol administered in vapor form, 500 gm. being evaporated during ten hours in a kennel 1 cubic meter in size. These animals showed all the manifestations of "ether jag" as they are seen in industrial poisoning. Then tolerance was gained and they did not suffer in health; in fact, three of them gained somewhat in weight; but when two were killed and examined, a general condition of stasis was found in the organs and brain, with fatty degeneration in the liver and in the kidney epithelium.

*Amyl Acetate; Acetone.*—These are the solvents used for other powders. Amyl acetate is called banana oil by the workmen; and perhaps because of its strong, sickeningly sweet odor, they attribute to it the headache, dizziness, smarting of the eyes, and other symptoms from which they suffer when using a mixture containing it.[17] Lehmann,[18] however, experimenting on men as well as on animals, found it slightly toxic, and in powder works, when it is not used in combination with other poisons, it does not seem to cause any discomfort. Acetone is listed by Sommerfeld as a poison, but Kobert thinks industrial poisoning from it hardly thinkable. I found the men in one plant using it as an eye wash when they got a foreign particle in the eye, and in another plant the physician told me that acetone was a good substitute for iodin in the treatment of slight wounds.

*Nitroglycerin.*—It sounds strange to say that this very dangerous explosive is the safest of all, but that is true if one is considering poisoning, not accidents. Indeed, it is probably true of accidents also, because we have been making nitroglycerin a great many years and have learned how to do it, as we have not learned how to make the newer explosives. All the precautions taken in nitroglycerin works against accidents serve also as preventives of poisoning: strict cleanliness of the premises, separation of different processes so that as small a number of men as possible will be in any one building, close watch against decomposition during nitration, and prompt drowning of the charge when that occurs.[19]

There are a few other poisons given off in gaseous form during the preparation of compounds used in this industry. There is chlorin gas, which passes off during the early stage of nitric acid manufacture, when the sulphuric acid acting on Chili saltpeter meets the common salt that is always present as an impurity. Most acid works try to provide in some way for the carrying off of these fumes, and they are in any case so irrespirable that men get away as soon as possible, before much harm has been done. There is ammonia from the aqua ammonia used in dynamite plants for ammonium nitrate, which is added to the "dope." Sulphur dioxid, very irritating and dangerous, is given off in the making of sulphuric acid and at one stage in the manufacture of phenol.

This hasty review of the substances which are necessary for the production of explosives is enough to show that it is an industry full of dangers to the workers quite aside from the ever present danger of violent explosions. Indeed, it offers an unusually rich field of research for those who are interested in the effect of volatile poisons on the human subject.

Hull House.

16. Sand, René: Internat. Cong. Indust. Hyg., Brussels, 1910.
17. Paint removers and varnish removers which smell strongly of amyl acetate contain in addition such volatile poisons as benzene, methyl alcohol and carbon disulphid, but the odor of the banana oil overpowers or masks the others.
18. Lehmann: Arch. f. Hyg., 1911, **74**, 1.
19. The singular absence of symptoms such as one would expect in nitroglycerin workers has been discussed by C. E. Laws (Nitroglycerin Head, THE JOURNAL A. M. A., March 5, 1910, p. 793); by G. E. Ebright (The Effects of Nitroglycerin on Those Engaged in Its Manufacture, ibid., Jan. 17, 1914, p. 201), and by Hudson (Med. Rec., New York, 1917, **91**, 89).

## THE THERAPEUTIC VALUE OF PERTUSSIS VACCINE IN WHOOPING COUGH*

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This study was made during the late summer of 1916, as part of the investigation by the Research Laboratory of the New York City Health Department on the value of pertussis vaccine in whooping cough.

Because of the infantile paralysis epidemic, car strikes and the expiration, October 1, of the lease of the building used for clinical purposes, the number of patients used for this study is far less than we could wish. The deductions, however, are suggestive, and show the danger of drawing conclusions too hastily and without making a critical comparison with control cases.

Dr. Luttinger, in his report of May, 1915, pointed out the pitfalls in accepting the statements of patients in the clinic; but in spite of the difficulties he encountered, he gathered from his records that pertussis vaccine lessened the duration of the whoop by 37.5 per cent. as against treatment with drugs. Hoag[1] is enthusiastic about the vaccine, claiming a reduction of the whoop to from sixteen to nineteen and one half days, after from three to ten injections of the vaccine, in contrast to the duration, from fifty to one hundred and forty-five days, in cases in which only one injection is given. Many other physicians, who have received and used the New York Health Department pertussis vaccine, verbally and by letter have reported most encouraging results. Drs. A. F. Hess and Matthias Nicoll are among those who are skeptical of the marked curative effects of a vaccine. Dr. Hess believes it has some prophylactic value. Before tabulation of our records, we had the impression that pertussis vaccine had had a somewhat favorable influence on the disease, but in scientific work, impressions,

* From the Bureau of Laboratories, New York City Health Department.

1. Hoag, W. B.: Am. Med., 1916, **11**, 255.

naturally, cannot count against the recorded fact. We believe now that the hope for a favorable reaction intensified the memory of those responses which were favorable, and impressed these cumulative mental records on our minds more strongly than the unfavorable, making them seem more numerous than they actually were.

In spite of the preponderance of favorable comments on the vaccine which were chiefly impressions, the directors of the whooping cough studies felt that further control work was necessary to determine the real and permanent place of pertussis vaccine in our therapeutic armamentarium.

Whooping cough is not easily studied. There is not the control of observations as in an illness confining the patient to bed. Like all diseases, it varies in degree according to epidemics, season, individual reaction, sudden (as they are not with pertussis vaccine), it must make a difference whether the interpreter of the symptoms is an optimist or a pessimist.

As Dr. Luttinger has pointed out, the ideal place to study the disease is the hospital, where the children may be controlled and watched by trained observers. Unfortunately, the children brought to the hospital with pertussis, or those who contract it there, do not represent the average. They more commonly have advanced cases with complications, or cases so severe that the parents are alarmed. Children with early cases contracted in the hospital usually leave when they have recovered from their primary trouble. On the whole, under present conditions, these cases are not favorable for testing the vaccine.

A pertussis crèche, in which children could be segregated during the day while the parents are at work,

TABLE 1.—AVERAGE DURATION OF THE DISEASE, ACCORDING TO SYMPTOMS

| | Whoop or Paroxysmal Cough Developed after Injections Began | | | | Injections Given During First Week of Whoop | | | | Injections During Second Week of Whoop | | | | Controls Terpin Hydrate Medication or Milk Injections | | Dilute Milk Injections; Whoop or Paroxysmal Cough Developing after Injections | | Dilute Milk Injections First Week; Whoop or Paroxysmal Cough | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pertussis Vaccine | | Influenza Vaccine | | Pertussis Vaccine | | Influenza Vaccine | | Pertussis Vaccine | | Influenza Vaccine | | | | | | | |
| | Number of Cases | Aver. Duration, Wks. | Number of Cases | Aver. Duration, Wks. | Number of Cases | Aver. Duration, Wks. | Number of Cases | Aver. Duration, Wks. | Number of Cases | Aver. Duration, Wks. | Number of Cases | Aver. Duration, Wks. | Number of Cases | Aver. Duration, Wks. | Number of Cases | Aver. Duration, Wks. | Number of Cases | Aver. Duration, Wks. |
| Mild onset; 3 or 4 injections | | | | | | | | | | | | | | | | | | |
| Cough | 25 | 7-8 | 21 | 7-8 | 23 | 8 | 6 | 7-8 | 4 | 8-9 | 4 | 9-10 | 5 | 9 | 4 | 5 | 5 | 7-8 |
| Whoop | 21 | 2-3 | 18 | 4-5 | 22 | 4-5 | 5 | 4-5 | 4 | 3-4 | 3 | 7-8 | 5 | 2-3 | 2 | 2-3 | 3 | 3-4 |
| Vomiting | 17 | 3 | 14 | 3-4 | 19 | 3-4 | 3 | 4-5 | 3 | 2-3 | 3 | <1 | 4 | 2-3 | 1 | <1 | 4 | 2-3 |
| Parox. cough | 4 | 4-5 | 3 | 4-5 | 1 | 6-7 | .. | .... | ... | .... | 1 | 3 | ... | .... | 2 | 2-3 | 2 | 3-4 |
| Moderate or severe onset; 3 or 4 injections | | | | | | | | | | | | | | | | | | |
| Cough | 5 | 10 | 7 | 7-8 | 43 | 8 | 34 | 8-9 | 36 | 8-9 | 22 | 9-10 | 18 | 11-12 | 1 | 8-9 | 1 | 12 |
| Whoop | 4 | 5-6 | 6 | 4-5 | 41 | 5-6 | 32 | 4-5 | 34 | 5-6 | 22 | 5-6 | 17 | 6-7 | 1 | 4-5 | 1 | 2-3 |
| Vomiting | 5 | 4-5 | 6 | 2-3 | 39 | 4 | 30 | 3-4 | 31 | 4-5 | 19 | 5 | 11 | 6 | 1 | 4-5 | 1 | 11 |
| Parox. cough | .. | .... | 1 | 5-6 | 2 | 6 | 2 | 6 | 2 | 5 | ... | .... | 1 | 4-5 | | | | |
| Mild onset; 2 injections | | | | | | | | | | | | | | | | | | |
| Cough | 2 | 5-6 | 2 | 7 | 1 | 7-8 | 2 | 5 | ... | .... | 2 | 11-12 | | | | | | |
| Whoop | 2 | 3-4 | 2 | 2-3 | 1 | 1-2 | 2 | 3 | ... | .... | 2 | 9-10 | | | | | | |
| Vomiting | 1 | <1 | .. | .... | .. | .... | .. | .... | ... | .... | 2 | 5 | | | | | | |
| Moderate or severe onset | | | | | | | | | | | | | | | | | | |
| Cough | 1 | 7-8 | 3 | 7-8 | 2 | 10 | 2 | 11-12 | 3 | 9-10 | 7 | 8-9 | | | | | | |
| Whoop | 1 | 5-6 | 3 | 6-7 | 2 | 6 | 2 | 9 | 3 | 6-7 | 7 | 6-7 | | | | | | |
| Vomiting | 1 | 6-7 | 3 | 5-6 | 2 | 4-5 | 2 | 5 | 3 | 1-2 | 7 | 4-5 | | | | | | |
| Mild onset; 1 injection | | | | | | | | | | | | | | | | | | |
| Cough | 1 | 7-8 | 1 | 10-12 | 4 | 6-7 | 1 | 6-7 | 2 | 7-8 | 1 | 9-10 | | | | | | |
| Whoop | 1 | 3-4 | 1 | 7-8 | 3 | 5-6 | 1 | 3-4 | 2 | 6 | 1 | 2-3 | | | | | | |
| Vomiting | .. | .... | .. | .... | 4 | 2 | 1 | <1 | 2 | 2-3 | 1 | 3-4 | | | | | | |
| Parox. cough | .. | .... | .. | .... | 1 | 4-5 | 0 | 0 | | | | | | | | | | |
| Moderate or severe onset | | | | | | | | | | | | | | | | | | |
| Cough | .. | .... | .. | .... | 2 | 9 | 3 | 7-8 | 4 | 7-8 | 8 | 8-9 | | | | | | |
| Whoop | .. | .... | .. | .... | 2 | 5-6 | 2 | 3-4 | 4 | 5-6 | 8 | 6-7 | | | | | | |
| Vomiting | .. | .... | .. | .... | 2 | 2-3 | 2 | 4-5 | 4 | 3 | 8 | 4-5 | | | | | | |
| Parox. cough | .. | .... | .. | .... | .. | .... | 1 | 8-9 | | | | | | | | | | |

etc. Members of the same family, ill at the same time, react differently. While one person in a family exhibits a mild and short paroxysmal stage of the disease, another, under apparently the same conditions, suffers a severe and alarming attack. The others may escape entirely. It is unsafe, therefore, to draw comparisons between the vaccine treated and the nonvaccine treated in a single family. Most of our impressions are probably obtained thus.

The only statistics which can be of value are those culled from a large number of cases and carefully and critically observed, so that the extreme variations of the disease itself and the errors which must creep in when one has to depend on the word of parent or guardian for our knowledge of the progress of the disease are leveled down and reduced to a minimum.

The personal equation of the examiner, too, must be reckoned with. When results are not striking and would afford a fair opportunity of study; but, as far as we know, there are none. Of course, the child could not be observed at night. It is at this time of the twenty-four hours that the mothers, according to Dr. Luttinger, report favorable results from the vaccine. Unless such a crèche could be located in a whooping cough neighborhood, its value, from the sanitarian's point of view, would be minimized by the danger of conveying infection during transportation of the child to it.

The clinic, then, at present in New York is the available, but not altogether satisfactory place for trying out the effects of the vaccine. Leaving out the question of the danger of transmitting contagion during the journey to and from the clinic and in the waiting room, we cannot get away from the fact that we are obliged to rely on the untrained, if not ignorant, unintelligent or mendacious parent or guardian for

our facts. As often as not, they try to answer to please the questioner; or exaggerate symptoms, hoping for better treatment; or they lessen symptoms to get a discharge for the child to go to the country or return to school, etc.

Unless the child coughs in the clinic or presents some corroborative suggestive symptoms, such as subconjunctival hemorrhage, ulcer of the frenum, or puffy eyelids, how can one be sure that the child has whooping cough? It is not unusual for a young mother to say after one or more visits, "My child does not cough like those I have heard. I do not believe he has whooping cough after all." During last summer, at least, according to subsequent confession, some mothers brought their children for injections "because they thought 'the needle' would prevent infantile paralysis." The Italians, particularly, feel that the "syringa" is wonderful treatment for anything that happens to ail one. It makes weak children strong.

The cases suitable for treatment, too, are cut down by the fact that the parent is apt to wait for the height of the paroxysmal stage before she brings the child for treatment. A vaccine that "cures" when begun at the end of the second or during the third week must be accepted with a grain of salt. One would expect spontaneous recession. Some observers report giving the vaccine every other day until they get a response — from six to ten or more injections. This would cover a period of two, three or more weeks and, if the injections were begun after the paroxysmal cough or whoop had declared itself, would carry them over into what would ordinarily be the declining stage of the disease.

Because of these difficulties (and others) we were obliged to throw out many of our records in collating our figures. Over 1,000 patients were seen by us from July 10 to Sept. 30, 1916. About 500 were rejected because they presented themselves after the second week of the disease, or because the records were too incomplete; 93, because of questionable whooping cough; 49, because the information was unreliable; 126, who had either moved or given a wrong address so that their subsequent history after the closing of the clinic could not be obtained; 6, because they were not at home on several visits of inquiry; 3, because of questionable exposure to whooping cough, and 1, because the original record card was lost.

The plan of our investigation differs from Dr. Luttinger's in using, as a control, inoculations, made for purposes of comparison, of alternate patients, with a vaccine made of an organism somewhat similar to *Bacillus pertussis* and one likewise found in throat secretions — the influenza bacillus. Only patients presenting themselves before the third week of the paroxysmal stage or the third week of the whoop were injected. Injections were intramuscular. Other patients were treated with terpin hydrate by mouth and also a few by intramuscular injections of a highly diluted milk solution. These were used as controls to show how the disease was running at that season. Three or four injections were given each patient who returned to the clinic, one every other day, and a fourth from five to seven days after the third. The last mentioned was given only when the paroxysmal stage was progressing unfavorably.

TABLE 2.—IMMUNITY

| | Number of Children in Family | | | | | | | | | | | Families Total | Children in Families Total | Immunes | Cases Whooping Cough | Per Cent. Immune |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | | | | | |
| Number families with 100 per cent. whooping cough | 67 | 46 | 23 | 15 | 7 | 4 | 1 | 2 | .. | .. | 1 | 166 | 381 | 0 | 381 | 0 |
| Number whooping cough families 1-6 immunes (nonvaccinated) first exposure in family | .. | 11 | 18 | 17 | 12 | 4 | 2 | 2 | 1 | .. | .. | 67 | 267 | 155 | 112 | 58 |
| Number families with immunes, second exposure in family | .. | .. | 1 | 3 | 3 | .. | .. | 1 | 1 | .. | .. | 9 | 47 | 18 | 27 | |
| Number families with immunes, third exposure in family | .. | .. | .. | .. | 1 | .. | .. | .. | .. | .. | .. | 1 | 5 | 1 | 4 | |
| Number families with immunes who received influenza vaccine | .. | 5 | 3 | .. | 2 | 1 | .. | .. | 1 | .. | .. | 12 | 44 | 19 | 18 | |
| Number families with immunes, some receiving influenza vaccine and some pertussis vaccine | .. | .. | 2 | 3 | .. | 1 | .. | .. | .. | .. | .. | 6 | 24 | | | |
| Number families with immunes who received pertussis vaccine | .. | 6 | 7 | 3 | 2 | 2 | .. | .. | .. | .. | .. | 20 | 67 | 30 | 37 | |

The intelligence of the guardian or parent who reported the symptoms was noted in a record, careful cross examinations were made to rule out false reports as far as possible, and note was taken of every child actually heard with a typical paroxysmal cough in the clinic. Home visits to complete the records were made in every case in which the patient failed to return to the clinic until discharged.

In recording the remarks on the charts, the investigators were not biased by a knowledge of the vaccines employed, as they did not know until the study was finished which was which. This secret was safeguarded by the maker of the vaccines.

TABLE 3.—EXPOSED CHILDREN WHO DID NOT CONTRACT WHOOPING COUGH (FAMILY EXPOSURE; SIXTY-SEVEN FAMILIES)

| Number Children (67 Families) | Number Children in Family | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| Number immunes (nonvaccinated); first exposure in family | 11 | 26 | 38 | 44 | 18 | 8 | 8 | 1 | 154 |
| Number immune children inoculated with influenza vaccine | 5 | 5 | 3 | 2 | 3 | .. | .. | 1 | 19 |
| Number immunes inoculated with pertussis vaccine | 6 | 10 | 7 | 3 | 4 | .. | .. | .. | 30 |
| Number children in partially immune families who contracted whooping cough, first exposure in family | .. | .. | .. | .. | .. | .. | .. | .. | 112 |
| Number children in partially immune families who contracted whooping cough, second exposure in family | .. | 2 | 1 | .. | .. | .. | .. | .. | 3 |

Dr. Luttinger's 204 cases, reported in May, 1915, showed that the patients treated with vaccine whooped, on an average, twenty-five days, while the patients treated with drugs whooped, on an average, forty days.

We wish to remind the reader that we feel that our numbers are much too small to be of full scientific value. We quote them chiefly for the interest of comparison.

Group 1: Grouping together, as did Dr. Luttinger and Dr. Hoag, all our patients treated with pertussis

vaccine (136), we find that the whoop averaged thirty-two days. In those treated with the influenza vaccine (94), the whoop averaged thirty-five days. In the controls treated with highly diluted milk injections or terpin hydrate medication (34), the whoop averaged twenty-six days.

Group 2: In a somewhat different grouping, division was made into those that were mild in intensity before the vaccine treatment and those that showed a moderate or severe onset before treatment.

TABLE 4.—EXPOSED CHILDREN WHO ESCAPED WHOOPING COUGH (SEVENTY-NINE FAMILIES) ACCORDING TO AGE

| | Year | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Under 1 | 1st | 2d | 3d | 4th | 5th | 6th | 7th | 8th | 9th | 10th | 11th | 12th | 13th | 14th | 15th | 16th | 17th | 18th | 19th | 20th | Total |
| Nonvaccinated | 7 | 2 | 6 | 7 | 6 | 11 | 9 | 9 | 14 | 8 | 10 | 7 | 11 | 4 | 7 | 6 | 8 | 3 | 3 | 2 | 4 | 144 |
| 1, 2 or 3 vaccinations of pertussis vaccine | 3 | 2 | 3 | 2 | 3 | 3 | 4 | 2 | 1 | 2 | 4 | | 1 | | | | | | | | | 30 |
| 1, 2 or 3 injections of influenza vaccine | 1 | 4 | 1 | 3 | 3 | 3 | 1 | 1 | 1 | 1 | | | | | | | | | | | | 19 |

In the mild cases treated with pertussis vaccine, whether injections were given before the whoop developed or during the first or second week of the whoop, it averaged twenty-five days. In similar cases treated with influenza vaccine, the whoop averaged thirty-nine days. In the controls (milk injections or terpin hydrate medication), the whoop averaged nineteen days.

In the cases with moderate or severe onset, treated with pertussis vaccine, the whoop averaged thirty-nine days. In similar cases treated with influenza vaccine, the whoop averaged thirty-one days. In the controls treated as above, the whoop averaged thirty-one days.

If we were to make our deductions of the values of the vaccines in these comparatively few cases, from the first arrangement of averages, we would have to infer that there was not much choice between pertussis and influenza vaccine, and that terpin hydrate by mouth or dilute milk injections were superior in curative effect to either.

From the second arrangement of averages, we would have to conclude that pertussis vaccine transcends influenza vaccine in the mild cases, and that influenza vaccine is more valuable in the moderate or severe cases.

It would seem fairer to draw our conclusions from a still different arrangement of our figures: a division into the degrees of intensity of the disease and, at the same time, a division into the stage of the disease in which the vaccine treatment was begun. If specific vaccines are valuable, they must prove their value when given early in the disease, and not during the height, just before the decline, or during the declining stage.

Group 3: After weeding out the questionable, unreliable and incomplete records, we divided the cases as mentioned above. We judged the intensity of the paroxysm by the degree of asphyxia exhibited by the color of the face and lips. Many cases can be vouched for as true cases since the patients were seen and heard to whoop in the clinic. The rest were judged by the mother's intelligence, by cross examinations, etc.

Of the mild cases, the average duration of the cough was from seven to eight weeks under both influenza and pertussis vaccine, except for those cases in which the injections were made during the second week of the whoop; in these the whoop under influenza vaccine runs about a week longer than under pertussis vaccine.

The whoop, in the cases in which pertussis vaccine was injected before the whoop appeared, averages about two weeks less than under influenza vaccine; when injected during the first week of the whoop, both pertussis and influenza vaccine seemed to act equally well; when injected during the second week, pertussis vaccine seemed to cut short the whoop by four weeks. In controls, however, untreated by vaccines, the whoop lasted only two or three weeks.

Vomiting is of about the same duration for both pertussis and influenza vaccine given before the whoop developed; less under pertussis vaccine than under influenza vaccine when given during the first week of the whoop; less under influenza vaccine given during the second week of the whoop and in the nonvaccinated control cases, the same as under pertussis vaccine given during the second week of the whoop.

In this series of cases, pertussis vaccine seems to have the advantage over influenza vaccine, and the nonvaccinated controls somewhat the advantage over both.

Of the moderate and severe cases, pertussis vaccine given before the whoop developed allows the average of the cough to run ten weeks, while influenza vaccine cuts it shorter by two or three weeks. Given during the first week of the whoop, the cough averages about the same length for both vaccines. Given during the second week of the whoop, the cough runs about a week longer under influenza vaccine. In the controls (nonvaccinated), the cough averages three weeks longer than the average of both vaccines.

The whoop averaged from five to six weeks with pertussis vaccine, whether given before the whoop developed or during the first or second week of the whoop, and in the first two instances runs about a week longer than under influenza vaccine. The controls run still a week longer.

TABLE 5.—CHILDREN WHO RECEIVED PROPHYLACTIC INJECTIONS

| | Exposure in Family | | | | Exposed to Neighbors | | | |
|---|---|---|---|---|---|---|---|---|
| | Pertussis Vaccine | | Influenza Vaccine | | Pertussis Vaccine | | Influenza Vaccine | |
| | No. Cases | Aver. Duration, Wks. | No. Cases | Aver. Duration, Wks. | No. Cases | Aver. Duration, Wks. | No. Cases | Aver. Duration, Wks. |
| Three injections | | | | | | | | |
| Simple cough | 12 | 5-6 | 6 | 6-7 | 2 | 2 | 1 | <1 |
| No cough | 8 | 0 | 6 | 0 | 1 | 0 | | |
| Total | 20 | .... | 12 | .... | 3 | .... | 1 | |
| Two injections | | | | | | | | |
| Simple cough | 4 | 6-7 | | | | | | |
| No cough | 1 | 0 | 1 | 0 | 1 | 0 | | |
| Total | 5 | .... | 1 | .... | 1 | | | |
| One injection | | | | | | | | |
| Simple cough | 2 | 5-6 | | | | | | |
| No cough | .. | .... | 2 | 0 | | | | |
| Total | 2 | .... | 2 | | | | | |
| Terpin hydrate medication | | | | | | | | |
| Cough | 1 | 10-12 | | | | | | |
| Total | 1 | | | | | | | |
| Grand total | 28 | .... | 15 | .... | 4 | .... | 1 | =48 |

The vomiting lasts longer under pertussis vaccine given before the whoop develops, or during the first week, and about the same under influenza vaccine treatment given during the second week of the whoop. The control cases run one or two weeks longer.

On the whole, in these cases, influenza vaccine seems to average more points than pertussis vaccine in relieving symptoms.

Before going further, we wish to repeat that we feel our numbers are too few to do more than demonstrate anew that deductions drawn from small numbers are faulty.

TABLE 6.—PROGRESS OF THE DISEASE AFTER THREE INJECTIONS OR VISITS, ACCORDING TO MOTHER'S OR GUARDIAN'S COMMENTS

| Treated with | Total No. Cases | Improved | | Slight Improvement | | No Change | | Worse | |
|---|---|---|---|---|---|---|---|---|---|
| | | No. | % | No. | % | No. | % | No. | % |
| Pertussis vaccine | 146 | 39 | 26.7 | 35 | 23.9 | 32 | 21.9 | 40 | 27.4 |
| Influenza vaccine | 113 | 31 | 27.4 | 37 | 32.7 | 15 | 13.2 | 30 | 26.5 |
| Terpin hydrate medication or dilute milk injections | 15 | 5 | 33.3 | 2 | 13.2 | 4 | 26.6 | 4 | 26.6 |

Of the 274 cases tabulated, according to the mother's or guardian's opinions of the course of the disease, immediately after the third injection or third visit, the percentage of children reported distinctly improved is almost the same for both pertussis and influenza vaccine, with 0.7 per cent. in favor of influenza vaccine. (It must be acknowledged that one cannot rule out a favorable reaction from the protein of the influenza bacillus.)

Among those reported slightly better after the third injection, influenza vaccine was 8.8 per cent. more potent.

Of those reported stationary, influenza vaccine shows 8.7 per cent. fewer unchanged than pertussis vaccine.

Of those reported worse, there is 0.9 per cent. difference again in favor of influenza vaccine.

Needless to say, the mothers did not know that there were two vaccines used. Likewise, it must be mentioned that the influenza vaccine was more apt to give both a local and febrile reaction than the pertussis vaccine.

Of the nonspecifically treated controls (terpin hydrate medication or dilute milk injections), 5.9 per cent. more were said to be improved after the third visit than with influenza vaccine; 10.6 per cent. fewer were slightly improved than with the pertussis vaccine, and 4.9 per cent. more remained stationary. Practically the same number as under pertussis or influenza vaccine, about one fourth of the cases, progressed unfavorably.

Contrary to our impressions, the mothers' reports do not make out a case for pertussis vaccine. In the mild cases, in which water made slightly turbid with milk, and thought at the time to be a vaccine by both doctor and parent of the child, was injected before the whoop or paroxysmal cough developed or during the first week of the whoop, the trouble terminated in less time than in cases treated with either pertussis or influenza vaccine.

Of the twenty-seven patients receiving only two injections of vaccine, if either vaccine had any effect at all, influenza vaccine in some groups did as well as the pertussis vaccine, and often better.

Of the twenty-seven patients receiving only one injection the same may be said.

## PROPHYLACTIC VALUE OF THE VACCINES; FAMILY IMMUNITY

Of the children exposed to whooping cough in their immediate family, nineteen received injections of influenza vaccine and thirty injections of pertussis vaccine. Some of these children had a mild bronchial cough at the time of inoculation. These coughs ran a variable time, but no case developed into a characteristic pertussis. These children were observed and visited in their homes for several months; none came down with pertussis. One child who had received one injection of pertussis vaccine contracted whooping cough two months afterward. Hoag reports seventeen cases in which persons injected prophylactically did not contract the disease. Luttinger gives a similar report. Hess reports that of 244 exposed patients (in an institution) inoculated prophylactically, twenty developed whooping cough.

TABLE 7.—DEATHS

| Treatment | No. Cases | No. Injections | When Begun | Last Injection | Date of Death | Cause of Death | Remarks |
|---|---|---|---|---|---|---|---|
| Pertussis vaccine | 1 | 4 | 1st day whoop | 13th day whoop | 13th day whoop? | Gastro-enteritis | Died in Metropolitan Hospital; full data not obtained |
| | 1 | 3 | 14th day whoop | 20th day whoop | 1 month after cough stopped | Convulsion | Whoop lasted forty-three days and cough sixty-four days |
| | 1 | 1 | 14th day whoop | ..... | 3d after injection | Convulsion | |
| | 1 | 1 | 7th day whoop | ..... | 5 days after injection | Penumonia | |
| | 1 | 3 | 14th day whoop | 19th day whoop | 5 weeks after injection | Pneumonia | |
| Total | 5 | | | | | | |
| Influenza vaccine | 1 | 3 | ..... | ..... | ? | Unknown | Information from neighbors |
| | 1 | 2 | 3d day paroxysmal cough | 5th day paroxysmal cough | 2 weeks after injection | Meningitic symptoms | Died on 18th day of paroxysmal cough; 15 days after 2d injection |
| | 1 | 3 | 14th day whoop | 19th day whoop | 12 days after injection | Tuberculous meningitis or infantile paralysis (?) | Said to have had pneumonia day after last injection; convulsions and death 10 and 12 days later; died at Bellevue Hospital |
| | 1 | 4 | 10th day whoop | 20th day whoop | 1 month after whoop stopped | Nephritis | |
| Total | 6 | | | | | | |
| Terpin hydrate medication | 1 | ..... | ..... | ..... | ..... | Pneumonia and empyema | Died 85th day of cough |

From this it might be concluded that both pertussis and influenza vaccine protect against whooping cough; but we can also show by our figures that of 267 children exposed to whooping cough in the families which showed partial immunity and not vaccinated against it, 155 (58 per cent.) did not contract it. Altogether, of 700 exposed children in 243 of our families, 174, or 24.8 per cent., escaped the disease. We have a record of three children who came down with pertussis on the second exposure in their family.

In nine families, totaling forty-seven children, eighteen children escaped a second exposure in the family; and in one family of five children, one child escaped a third exposure in the family.

In 166 families of 381 children, all of the children either had had whooping cough or were suffering from it at the time of their attendance at the clinic.

Of 243 families, the children of which were exposed to whooping cough, seventy-seven families (31.6 per cent.) exhibited an immunity in some of the children.

In Dr. Luttinger's series of ninety-two families, twenty-seven (29.3 per cent.) showed partial immunity.

In the light of these natural immunes, can we be sure that pertussis vaccine conferred immunity, especially since, according to our statistics, influenza vaccine apparently can do the same?

There were ten deaths in our series; five of the patients had received pertussis vaccine, four had received influenza vaccine, and one had been treated with drugs. Three of those receiving pertussis vaccine had received three or four injections. All the injections were given before the end of the second week.

## SUMMARY

Since whooping cough vaccine statistics under present conditions must be based chiefly on parents' reports, one must use careful judgment in accepting what they say.

Statistics, to be of any value, must be drawn from several thousand cases, as shown by the variable results obtained with the different groupings of our figures.

One must beware of "impressions."

Our figures show that the nonspecific influenza vaccine in Group 1 differs very little from pertussis vaccine in influencing the duration of the paroxysmal stages of the disease. In Group 2 it shortens the average length of this stage by eight days. In Group 3 it acts less well, on the whole, than the specific vaccine in the mild cases, and better than the specific vaccine in the moderate and severe cases.

Of all the cases, the shortest course was run in our nonvaccinated controls and those receiving inert, milk-colored water.

None of our patients inoculated for prophylaxis with either influenza or pertussis vaccine contracted the disease.

A partial immunity was exhibited by 31.6 per cent. of our families.

Fifty-eight per cent. of the children in these partially immune families escaped after exposure in the family.

Of 700 children exposed in their families, 24.8 per cent. escaped whooping cough.

## CONCLUSIONS

More observations and more critical observations with controls for comparison must be made before the case can be considered made out for the curative and prophylactic value of a specific pertussis vaccine.

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# THE TREATMENT OF CARRIERS OF ENDAMOEBA HISTOLYTICA WITH OIL OF CHENOPODIUM*

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In a previous publication, one of us (Walker[1]), called attention to the prevalence of carriers of *Endamoeba histolytica* among the people of endemic countries, and later (with Sellards[2]) demonstrated the important rôle which they play in the dissemination of endamebic dysentery. These carriers are always liable to develop dysentery or liver abscess and, because they continue for an indefinite time to pass large numbers of encysted endamebas in their stools, are a constant menace to the community. Consequently the control of this important tropical disease depends primarily on an efficient treatment to eradicate these carriers. Experience has shown that while subcutaneous injections of the soluble salts of emetin are very effective in the treatment of acute dysenteries and liver abscesses of endamebic origin, they fail in many cases to eliminate the encysted endamebas from the intestine. The other drugs which have been employed in endamebiasis, with the possible exception of thymol and male fern (Ujihara[3]), the claims for which are based on the results of one case treated with each drug, are either more or less ineffective on carriers or require long and disagreeable courses of treatment. A satisfactory treatment for carriers of *Endamoeba histolytica* not only must be capable of clearing the intestine of the parasites, but also it should not occupy too much of the patient's time, and its administration should be accompanied by as few disagreeable features as possible, in order that healthy carriers may be induced to undergo it.

Our experiments with the chenopodium treatment of endameba carriers were conducted at the Candelaria Hospital of the Madeira-Marmoré Railroad Company, Porto Velho, Amazonas, Brazil. They were not undertaken until shortly before the departure of one of us from South America, and consequently little more than the development of the method of treatment was accomplished. The oil of chenopodium used by us had been kept exposed to tropical light and temperature for over a year, and had undoubtedly lost some of its potency. The treatment found most effective by us consists of (1) magnesium sulphate, from ½ to 1 ounce, at 6 a. m.; (2) oil of chenopodium 16 minims in gelatin capsules at 8 a. m., 10 a. m. and 12 m., and (3) castor oil 1 ounce containing chloroform, 50 minims, at 2 p. m. This dosage is for adults; for children it should be reduced according to age. The administration of oil of chenopodium in gelatin capsules obviates all the disagreeable odor and taste of the oil.

* From the George Williams Hooper Foundation for Medical Research, University of California.

1. Walker, E. L.: A Comparative Study of the Amoebae in the Manila Water Supply, in the Intestinal Tract of Healthy Persons, and in Amoebic Dysentery, Philippine Jour. Sc., B, Med. Sc., 1911, **6**, 259-280.

2. Walker, E. L., and Sellards, A. W.: Experimental Entamoebic Dysentery, Philippine Jour. Sc., B, Trop. Med., 1913, **7**, 253-331.

3. Ujihara: Studien über die Amöbendysenterie, Ztschr. f. Hyg. u. Infektionskrankh., 1914, **77**, 329-355.

There are, however, several essential factors in the treatment which need careful consideration. One of these is the preliminary purgation with magnesium sulphate, which is a very important part of the treatment. The purpose of this is twofold, first to remove the excess of fecal matter from the intestine which envelops and protects the endamebas and dilutes the chenopodium, and, second and most important, to bring the endamebas out of their protective cysts and subject them in the vegetative condition to the action of the chenopodium. Our experiments have shown that this preliminary purging, which should not merely consist of the routine administration of the salts but should also secure free fluid bowel movements before the chenopodium is given, to be a most essential factor for successful treatment. Indeed, the success or failure of any method of treating endameba carriers with encysted endamebas in their intestines may depend on this preliminary purgation to get the endamebas in the unprotective vegetative stage. Secondly, the chenopodium must be administered while the stools are fluid, that is, at a short interval (two hours) after the purgative, in order that it may reach the endamebas while they are still in the vegetative stage. Finally, the stools of the patient must be examined repeatedly after the treatment by one capable of identifying *Endamoeba histolytica* in the resting and encysted as well as the motile stages.

The question regarding the number of stool examinations which is necessary to determine a cure is an important one. One of us (Walker) and Sellards,[2] in the course of 930 stool examinations of persons known to be infected with *Endamoeba histolytica* found the parasites 664 times, or two out of every three examinations. Therefore we have endeavored to make at least three stool examinations on different days after the treatment of our patients. It would be preferable, when possible, that stool examinations be made at intervals for some weeks or months after treatment in order to insure a cure.

The action of oil of chenopodium on unencysted *Endamoeba histolytica* was tested by giving this drug to patients with acute endamebic dysentery and examining the stools of these patients at frequent intervals during and following the ingestion of the chenopodium. It was found that oil of chenopodium is an active endamebicide for the vegetative stage of this organism. The motile endamebas, which were very numerous in the stools at the beginning of the treatment, were replaced by increasing numbers of dead and disintegrating endamebas until, after the third portion of the divided dose had passed through the intestine, living organisms were no longer present. Owing to the fact that any endamebas surviving treatment rapidly multiply, and to the nature of treatment, which precludes the repeated administration at short intervals, the aim of the chenopodium treatment is a *"therapia sterilisans magna."*

Of the fourteen carriers of *Endamoeba histolytica* treated by us with oil of chenopodium, all of whom were men, ten were apparently cured and four remained uncured. However, there is no reason to doubt that the latter might have been cured if they had received satisfactory treatment, with especial reference to the preliminary purgation, or if they had received further treatment. We are certain that some of the relapses were due to unsatisfactory preliminary purgation as, for example, the earlier unsuccessful treatments of Cases 3 and 4. These two patients were peculiarly nonreactive to magnesium sulphate, and successive treatments were absolutely without effect, until free fluid bowel movements were finally obtained in Case 3 only after a second dose of magnesium sulphate, before the chenopodium was administered. In the relapses of the other patients, unsatisfactory preliminary purgation may have been responsible since the administration of the treatment was not always personally supervised. The further treatment of the uncured patients was prevented by the departure of the senior author from Brazil.

CASES TREATED

| Patient | | Stool Examination Before Treatment | | Treatment | | Stool Examination After Treatment | | Remarks |
|---|---|---|---|---|---|---|---|---|
| No. | Nationality | Date | Endamoeba histolytica | No. | Dates | Dates | Result | |
| 1 | Bolivian | May 29 | + | 1 | June 1 | Aug. 22, 23, 24 | Negative | |
| 2 | Brazilian | Aug. 5 | +++ | 1 | Aug. 6 | Aug. 11, 19 | Negative | Patient left hospital Aug. 19 |
| 3 | Brazilian | Aug. 12 | + | 3 | Aug. 14, 25, 29 | Aug. 31, Sept. 1, 2, 3 | Negative | Relapsed after first 2 treatments |
| 4 | Brazilian | Aug. 12 | ++ | 3 | Aug. 14, 24, 30 | Aug. 31, Sept. 1, 2 | Negative | Relapsed after first 2 treatments |
| 5 | German | Aug. 18 | ++ | 1 | Aug. 19 | Aug. 21, 22, 23 | Negative | |
| 6 | Brazilian | Aug. 20 | + | 3 | Aug. 22, 27, 29 | Aug. 29, 30, 31, Sept. 1, 2 | Negative | Relapsed after 1st but not after 2d treatment; 3d treatment for cumulative effect |
| 7 | Bolivian | Aug. 22 | +++ | 3 | Aug. 24, 29, Sept. 21 | Sept. 22, 24 | Relapsed | |
| 8 | Brazilian | Aug. 23 | +++ | 3 | Aug. 27, Sept. 16, 24 | Sept. 26, 27 | Negative | Relapsed after first 2 treatments; patient left hospital Sept. 27 |
| 9 | Brazilian | Sept. 3 | +++ | 3 | Sept. 4, 12, 18 | Sept. 19, 20, 21 | Relapsed | |
| 10 | Brazilian | Sept. 3 | +++ | 1 | Sept. 5 | Sept. 8, 10, 12, 15 | Negative | |
| 11 | Brazilian | Sept. 4 | + | 1 | Sept. 7 | Sept. 8, 9, 11 | Negative | |
| 12 | Brazilian | Sept. 17 | +++ | 2 | Sept. 18, 22 | Sept. 23, 24 | Relapsed | |
| 13 | Brazilian | Sept. 18 | +++ | 2 | Sept. 19, 21 | Sept. 22, 23, 24 | Relapsed | |
| 14 | Brazilian | Sept. 18 | ++ | 1 | Sept. 21 | Sept. 23, 24, 25, 26 | Negative | |

In the ten apparently cured cases, six resulted from a single treatment, one after a double treatment with one day's interval between, and three after three treatments following two relapses. The dosage of chenopodium in the ten successful treatments was 16 and 16 minims in two cases and 16, 16 and 16 minims in eight cases. Although we believe that the success of the treatment depends more on the preliminary purgation than on the dosage of chenopodium, and cures have been obtained with 32 minims of chenopodium, yet we believe that 48 minims is surer in its results. We have never observed any harmful results from the full dosage.

These preliminary experiments indicate that for the treatment of carriers of *Endamoeba histolytica* oil of chenopodium is worthy of further investigation. They should be confirmed by further experiments in which fresh oil of chenopodium is used and with careful attention to the technic, with especial reference to the preliminary purgation, and to more extended stool examinations after treatment to insure permanence of the cures.

# A NEW AND SUPERIOR MERCURIAL GERMICIDE

PRELIMINARY REPORT *

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AND
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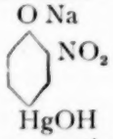
During the past two years the writers have been engaged in chemotherapeutic investigations, chiefly in connection with mercurial and arsenical compounds. We have elaborated a number of new compounds of mercury which we have tested out in experimental trypanosomiasis. We have also determined the germicidal activity of many of these substances against bacteria both in vitro and in vivo. By following certain favorable "leads" we have gradually arrived at the production of two organic mercurial compounds which exhibit remarkable germicidal properties in laboratory tests. One of these compounds, No. 99, possesses physical properties which render it specially available as a local antiseptic and germicide.

By reason of difficult solubility, No. 105 is not so adaptable for this purpose. No. 99, sodium oxymercury-orthonitro phenolate. For convenience the name mercurophen will be used temporarily. It

TABLE 1.—RESULTS OF ANTISEPTIC TESTS ON STAPHYLOCOCCUS AUREUS

| No. | Name of Compound | Germicidal Dose, Gm. | Germicidal Dilution |
|---|---|---|---|
| 99 | Mercurophen | 0.000001 | 1:10,000,000 |
| 105 | New mercury compound | 0.000001 | 1:10,000,000 |
| | Mercuric chlorid | 0.00005 | 1:200,000 |

contains about 53 per cent. of mercury, having substantially the structural formula: [1]




As yet we are not positive as to the structure position of the mercury. It occurs in the form of an odorless, brick red powder which is freely soluble in water; dilute solutions are amber-yellow. It may be readily molded in tablets, and in this form dissolves with great rapidity.

In view of the fact that our country is now at war with a foreign power, we have hastened this publication. We have recently placed our compound in the hands of a number of Philadelphia surgeons, with the purpose of having a determination of its clinical uses and value made as quickly as possible. If the clinical results in any manner approximate the laboratory findings, we shall immediately place the product at the disposal of the medical services of the army and navy. Indeed, an investigation of certain properties of this compound is now being conducted by the U. S. Hygienic Laboratory.

## RESULTS OF DISINFECTION TESTS

The germicidal activities of the new mercurial compounds were compared with mercuric chlorid in a large series of experiments in which various methods were employed, with the purpose of determining their comparative values from the standpoint of practical disinfection under different conditions.

(*a*) *Results With the Antiseptic Test.*—In what we have called an "antiseptic test," small numbers of the test micro-organism were exposed to high dilutions of the disinfectant over a long period of time. This technic has yielded us constant and decisive results, and has been found to be well adapted for comparative tests of the germicidal activity of new compounds in vitro in a menstruum of broth.[1]

TABLE 2.—BACTERICIDAL ACTIVITY OF PHENOL AND MERCURIAL COMPOUNDS ON STAPHYLOCOCCUS AUREUS IN A MENSTRUUM OF ASCITES FLUID (PIPET METHOD)

| Chemical Compound | Bactericidal | | Mercuric chlorid Coefficient (5 Min.) |
|---|---|---|---|
| | 5 Min. | 30 Min. | |
| New mercury compound No. 99 (mercurophen) | More than 1:1,600,000 | More than 1:1,160,000 | 200 |
| New mercury compound No. 105 | 1:400,000 | 1:1,160,000 | 50 |
| Mercuric chlorid | 1:8,000 | 1:32,000 | |
| Phenol (carbolic acid) | Less than 1:40 | Less than 1:40 | |

The results of numerous antiseptic tests with the new mercurial compounds and mercuric chlorid broth cultures of *Staphylococcus aureus* being employed, are summarized in Table 1. As shown in this table, the new compounds exhibit an extremely high disinfectant value in a menstruum of broth, and are at least fifty times more active than mercuric chlorid under these conditions.

(*b*) *Results of Disinfection Tests in a Menstruum of Ascites Fluid.*—As the disinfectant power of a substance is likely to be less pronounced in a menstruum rich in protein, as serum or ascites fluid, as compared with a menstruum of salt solution or broth, we have determined the disinfectant activity of the new mercurial compounds and mercuric chlorid in a menstruum of ascites fluid with the pipet method,[2] modified after that of Wright.[3] The results of these

TABLE 3.—PHENOL COEFFICIENTS OF MERCURIAL COMPOUNDS FOR B. TYPHOSUS BY THE RIDEAL-WALKER METHOD

| Name | Dilution | Exposure in Minutes | | | | | | Phenol Coefficients (15 Min.) |
|---|---|---|---|---|---|---|---|---|
| | | 2½ | 5 | 7½ | 10 | 12½ | 15 | |
| Phenol | 1:20 | + | + | — | — | — | — | |
| | 1:30 | + | — | + | — | — | — | |
| | 1:40 | + | + | + | + | + | — | |
| | 1:60 | + | + | + | + | + | + | |
| | 1:80 | + | + | + | + | + | + | |
| No. 99 (mercurophen) | 1:50,000 | — | — | — | — | — | — | 10,000 |
| | 1:100,000 | — | — | — | — | — | — | |
| | 1:200,000 | — | — | — | — | — | — | |
| | 1:400,000 | + | + | + | + | + | — | |
| | 1:800,000 | + | + | + | + | + | + | |
| No. 105 | 1:50,000 | — | — | — | — | — | — | 10,000 |
| | 1:100,000 | — | — | — | — | — | — | |
| | 1:200,000 | — | — | — | — | — | — | |
| | 1:400,000 | + | — | — | — | — | — | |
| | 1:800,000 | + | + | + | + | + | + | |
| Mercuric chlorid | 1:2,000 | — | — | — | — | — | — | 300 |
| | 1:4,000 | — | — | — | — | — | — | |
| | 1:6,000 | — | — | — | — | — | — | |
| | 1:8,000 | + | — | — | — | — | — | |
| | 1:12,000 | + | + | + | + | + | — | |
| | 1:16,000 | + | + | + | + | + | + | |

* From the Dermatological Research Laboratories of the Philadelphia Polyclinic and College for Graduates in Medicine.

1. Schamberg, J. F., and Kolmer, J. A.: The Germicidal Activity of Calomel, THE JOURNAL A. M. A., June 20, 1914, p. 1950. Kolmer, J. A.; Cohen, S. S., and Heist, G. D.: Jour. Infect. Dis., 1917, **20**, 293.

2. Kolmer, Cohen and Heist (FFootnote 1). Schamberg, J. F.; Kolmer, J. A., and Raiziss, G. W.: Am. Jour. Syph., 1917, **1**, 1.

3. Wright, A. E.: Technique of the Test and Capillary Glass Tube, London, Constable & Co., 1912.

comparative tests are summarized in Table 2, and show that our new mercury compound No. 99 (mercurophen) is 200 times more active than mercuric chlorid, and the new compound No. 105 is fifty times more active than mercuric chlorid in a menstruum of serum proteins. It is apparent, therefore, that the new compounds possess less affinity for the serum proteins than is shown by mercuric chlorid, and this has been demonstrated in precipitation tests (Table 8).

(*c*) *Results with the Rideal-Walker Method.*—In this method, which is similar to the Hygienic Laboratory method, the test micro-organism (*B. typhosus*) is exposed for short periods of time to large amounts of disinfectant in water at 20 C., and the results expressed in comparison with the disinfectant power of standard solutions of phenol (phenol coefficient). The results of a set of experiments in which mercurophen, new mercurial compound No. 105, and mercuric chlorid were employed, are shown in Table 3. As shown in this table, both mercurophen and the new mercurial compound No. 105 are 10,000 times more active in this test than phenol, and more than thirty times more active than mercuric chlorid.

(*d*) *Results of Hand Disinfection Tests.*—For the purpose of determining the approximate disinfectant activity of the new mercurial compounds on the skin under ordinary conditions, a series of experiments

TABLE 4.—RESULTS OF HAND DISINFECTION TESTS*

| No. of Compound | Name of Compound | Dilutions | Exposure in Minutes† | | |
|---|---|---|---|---|---|
| | | | 1 | 5 | 15 |
| 99 | Mercurophen | 1:5,000 | —‡ | — | — |
| 99 | Mercurophen | 1:10,000 | — | — | — |
| 105 | New mercury compound | 1:5,000 | — | — | — |
| 105 | New mercury compound | 1:10,000 | — | — | — |
| | Mercuric chlorid | 1:5,000 | + | + | — |
| | Mercuric chlorid | 1:10,000 | + | + | + |

* All cultures of hands before immersion in these disinfectants showed heavy growths. In this table, — denotes sterile, and + growth.
† Solutions of disinfectant, from 38 to 42 C.
‡ Cultures made in glucose broth with sterile swabs; results after forty-eight hours' incubation.

were conducted on the hands of a number of persons (laboratory assistants).

In one series the hands were first cultivated by rubbing the skin in a vigorous manner with a sterile swab moistened with sterile broth and inoculating tubes of sterile glucose broth; this was followed by immersion of the hands in vessels containing a solution of the disinfectant in distilled water at a temperature of from 38 to 42 C. At intervals of one, five and fifteen minutes the hands were quickly flushed with sterile distilled water from a pipet to remove the disinfectant and cultivated in the same manner. The results of a number of these experiments are expressed in Table 4, in which it was found that 1:5,000 and 1:10,000 solutions of mercurophen (No. 99) and new mercurial compound No. 105 sterilized the skin under these conditions in an exposure of one minute, whereas mercuric chlorid in a 1:5,000 dilution required an exposure of over five minutes, while a 1:10,000 dilution failed to sterilize in an exposure of fifteen minutes.

Further experiments have shown that mercurophen (No. 99) is capable of sterilizing the skin of the hands in an exposure of one minute in a dilution as high as 1:40,000 and the new mercurial compound (No. 105) in dilution up to 1:80,000, whereas mercuric chlorid fails to accomplish these results in a dilution of 1:5,000 under identical conditions (Table 5).

(*e*) *Results of Disinfection Tests With Rubber Tubing.*—In order to determine the disinfectant value of the new mercurial compounds for rubber, particularly catheters, pieces of ordinary rubber tubing 100 mm. in length (5 mm. bore and 3 mm. wall) were immersed in varying dilutions of the new mercurial compounds and mercuric chlorid in distilled water at

TABLE 5.—RESULTS OF HAND DISINFECTION TESTS*

| Dilutions | Exposure of One Minute† | | |
|---|---|---|---|
| | No. 99 | No. 105 | Mercuric chlorid |
| 1:5,000 | —‡ | — | + |
| 1:10,000 | — | — | + |
| 1:20,000 | — | — | + |
| 1:40,000 | — | — | + |
| 1:80,000 | + | — | + |

* All cultures made of hands before immersion showed heavy growths; — denotes sterility, and +, growth.
† Solution of disinfectant, 42 C.
‡ Cultures made in glucose broth with sterile swabs; results after twenty-four hours' incubation.

room temperature for a period of thirty minutes, followed by thorough washing with sterile distilled water and cultivating in large tubes of glucose broth for seventy-two hours. Controls were included in each experiment, consisting of tubing placed in sterile distilled water alone, and always showed heavy growths of various cocci and bacilli. The results of numerous experiments were similar to those shown in Table 6, indicating that solutions of mercurophen (No. 99) and new mercurial compound No. 105 sterilized the rubber tubing under these conditions in dilutions as high as 1:100,000.

In a second series of experiments the pieces of rubber tubing were purposely infected beforehand by immersion for seventy-two hours in mixed broth cultures of *Staphylococcus aureus* and *B. subtilis* (a spore-forming micro-organism). The results of these experiments are also shown by the results expressed in Table 6, and indicate that while 1:500 dilution of mercurophen (No. 99) and No. 105 were required to bring about sterilization in a thirty-minute exposure, mercuric chlorid failed in dilution as low as 1:50.

(*f*) *Results of Disinfection Tests With Feces.*—In order to determine the disinfectant value of the new

TABLE 6.—SUMMARY OF RESULTS OF GERMICIDAL TESTS WITH RUBBER TUBING AND NEW MERCURIAL COMPOUNDS

| No. of Compound | Name of Compound | Results after Exposure of 30 Minutes | |
|---|---|---|---|
| | | With Ordinary Rubber Tubing | With Heavily Infected* Rubber Tubing |
| 99 | Mercurophen | 1:100,000 | 1:500 |
| 105 | New mercurial compound | 1:128,000 | 1:500 |
| | Mercuric chlorid | 1: 16,000 | Not in 1:50 |

* Infected by immersing the tubing in broth cultures of Staphylococcus aureus and B. subtilis for seventy-two hours prior to the germicidal tests.

mercurial compounds in the presence of considerable protein material, as an indication of their practical value in the disinfection of feces (such as the bowel discharges of persons with typhoid fever), a series of experiments were conducted as follows:

One gm. of fresh human feces was added to 100 c.c. of a 1:2,000, 1:5,000, 1:10,000 and 1:20,000 solution of mercurophen (No. 99), new mercury compound No. 105 and mercuric chlorid, respectively, at room temperature, and

thoroughly emulsified; at intervals of five, fifteen, thirty, forty-five and sixty minutes, 0.1 c.c. of each of the foregoing emulsions was placed in sterile Petri dishes and mixed with 10 c.c. of agar at 42 C. After forty-eight hours' incubation, the plates were counted. Controls were prepared by emulsifying 1 gm. of feces in 100 c.c. of sterile distilled water and plated at the same intervals. All of the control plates were uncountable, owing to the presence of large numbers of colonies.

The results of a series of experiments similar to those shown in Table 7 indicated that thin and thoroughly mixed dilutions of feces and mercurophen (No. 99) 1:5,000, and new mercurial compound No. 105 (1:5,000) in water, will result in the sterilization of the feces at room temperature in periods of thirty minutes or less, whereas a dilution of 1:2,000 mercuric chlorid was required to bring about similar results.

TABLE 7.—RESULTS OF DISINFECTION OF FECES

| No. of Compound | Name of Compound | Final Dilution | Exposure in Minutes | | | | |
|---|---|---|---|---|---|---|---|
| | | | 5 | 15 | 30 | 45 | 60 |
| 99 | Mercurophen.... | 1:5,000 | Unc.* | 6,000† | Sterile | Sterile | Sterile |
| 105 | New mercury compound..... | 1:5,000 | Sterile | Sterile | Sterile | Sterile | Sterile |
| 105 | New mercury compound..... | 1:10,000 | Unc. | 16,000 | 10,800 | 200 | 10 |
| 105 | New mercury compound..... | 1:20,000 | Unc. | Unc. | Unc. | Unc. | 6200 |
| | Mercuric chlorid | 1:5,000 | Unc. | Unc. | Unc. | 7500 | 480 |
| | Mercuric chlorid | 1:2,000 | 8,000 | 3,000 | Sterile | Sterile | Sterile |

* Uncounted. † Colonies in the plate.

## THE PRECIPITATING ACTIVITY OF MERCURIALS ON HUMAN SERUM PROTEINS

As previously stated, the disinfectant activity of mercurophen and the new mercurial compound (No. 105) are maintained to a remarkable degree in a menstruum rich in serum proteins. This property is one of great value, particularly in the treatment of infectious material in which large amounts of protein are present.

In order to determine further the precipitating activity of these new mercurial compounds, a series of experiments was conducted as follows: A series of dilutions of mercurophen (No. 99), new mercurial compound No. 105 and mercuric chlorid in distilled water, in amounts of 0.5 c.c., were placed in small test tubes; to each tube and to the controls (of distilled water alone) was added 0.5 c.c. of fresh clear human blood serum followed by gentle mixing. An immediate clouding and precipitate followed in the majority of the tubes containing mercuric chlorid; the results are shown in Table 8 after the tubes had been standing at room temperature for twenty-four hours.

As shown in this table, mercuric chlorid produced visible precipitation in dilution as high as 1:1,000, whereas mercurophen (No. 99) failed to produce any visible precipitation in dilutions as low as 1:300 and the new mercurial compound (No. 105) produced no precipitation in dilutions as low as 1:400 (lower dilution could not be used as clear solutions of this compound in distilled water could not be obtained lower than 1:200).

## THE NONCORROSIVE EFFECT OF THE NEW MERCURIAL COMPOUNDS

As is well known, the ordinary mercurial compounds, particularly mercuric chlorid, have a marked tendency to corrode metals by producing amalgam compounds; therefore these substances cannot be used to sterilize surgical instruments. Experiments to determine the corrosive action of mercurophen (No. 99) and new mercurial compound No. 105 have shown both of these substances to be free of corrosive action in dilutions as low as 1:500 and with exposures as long as twenty-four hours. New nickel plated and highly polished surgical instruments immersed in 1:5,000 solutions of mercurophen (No. 99) and new mercurial compound No. 105 for twenty-four hours showed absolutely no evidences of tarnishing. With old instruments in which the plating had been partly removed and the underlying metal exposed, varying amounts of rust were produced during the twenty-four hours as a result of the action of the water used in the preparation of the solutions.

## CONCLUSIONS

1. Mercurial compound No. 99 sodium oxymercury-orthonitro phenolate (mercurophen) exhibits against the *Staphylococcus aureus*, in the "antiseptic test," fifty times greater activity than mercuric chlorid; it destroys these bacteria on prolonged exposure in boullion in a dilution of 1:10,000,000.

2. In a menstruum of ascites fluid, mercurophen is 200 times more germicidal against the *Staphylococcus aureus* than mercuric chlorid.

3. By the Rideal-Walker method, mercurophen exhibits 10,000 times greater germicidal power against the *Bacillus typhosus* than phenol, and over thirty times greater activity than mercuric chlorid.

4. Mercurophen disinfects the hands in dilutions of from 1:10,000 to 1:40,000 in one minute, whereas mercuric chlorid in a dilution of 1:5,000 requires over five minutes, and in a dilution of 1:10,000 requires over fifteen minutes.

5. Mercurophen sterilizes ordinary rubber tubing in thirty minutes in a dilution of 1:100,000. Mercuric chlorid accomplishes this result in a dilution of 1:16,000. With tubing heavily infected with cocci and spores, mercurophen requires a 1:500 solution and mercuric chlorid fails in a 1:50 solution.

TABLE 8.—PRECIPITATING ACTIVITY OF MERCURIALS ON HUMAN SERUM PROTEINS*

| Final Dilution | Compounds | | |
|---|---|---|---|
| | No. 99 | No. 105 | Mercuric Chlorid |
| 1:200 | + | 0 | ++ |
| 1:300 | − | 0 | ++ |
| 1:400 | − | − | ++ |
| 1:600 | − | − | ++ |
| 1:800 | − | − | ++ |
| 1:1,000 | − | − | + |
| 1:1,200 | − | − | − |
| 1:2,000 | − | − | − |

* In this table, ++ denotes heavy precipitate; +, slight precipitate, and −, no precipitate. Controls showed no precipitate.

6. Mercurophen in a 1:5,000 solution sterilizes feces in thirty minutes; mercuric chlorid accomplishes this result in a 1:2,000 solution.

7. The precipitating effect of mercuric chlorid on human serum proteins is four to five times greater than that exhibited by mercurophen. This is an obvious advantage possessed by the latter substance.

8. Solutions of 1:5,000 of mercurophen exhibit no evidence of tarnishing on nickel plated instruments after twenty-four hours' exposure.

9. In experiments not detailed here, mercurophen administered intravenously in rabbits has a lower toxicity than mercuric chlorid.

# PERTUSSIS VACCINE

## ITS VALUE AS A CURATIVE AND PROPHYLACTIC AGENT IN WHOOPING COUGH *

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The discontinuance of the whooping cough clinic, which had been maintained by the department for over two years, brought to an end the experimental administration of pertussis vaccine by the Bureau of Laboratories. At the request of Dr. William H. Park, under whose supervision the work had been carried out, a report covering the major part was prepared, and a digest of it will form the first part of this article.

Owing to the fact that, since the publication of the department's first report, some investigators had not obtained decisively good results, it seemed desirable that an attempt be made to summarize the experiences of all those to whom we had supplied our pertussis vaccine. A circular letter was mailed, therefore, to 250 physicians enclosing a questionnaire on the action of pertussis vaccine as compared to drug treatment in whooping cough. Over 180 replies reached us up to January 10. These reports form the second part of the article.

### I. Results Obtained at the Whooping Cough Clinic

The clinical material was about the same as that of any dispensary on the East Side, with a sprinkling of patients from other parts of the city and even suburban towns. From an experimental point of view this material leaves much to be desired, and the conclusions to be drawn must, perforce, be limited. Thus, less than half of the 5,000 odd patients who applied for treatment were available for study. The rest had to be discarded on account of incomplete attendance, lack of reliability of guardian, erroneous diagnosis, or for other reasons.

Besides the element of uncertainty which enters into all clinical observations, even the best controlled, one must reckon, in this case, with a heterogeneous class and large number of observers on whom we had to rely for the history, course of disease, severity of paroxysms, etc. The conception of different parents and guardians of the severity and symptoms of a disease is naturally apt to be more than divergent and often inaccurate.

Fortunately, I have had the rare opportunity of being in actual attendance at the clinic for the last two years, and this uninterrupted service has enabled me to learn to discriminate between certain groups of patients. Nevertheless, I should be loath to ascribe to my interpretations anything but a relative value.

The numerous tables as well as the record cards on which this digest is based are on file at the Bureau of Laboratories, and it was thought best to leave most of them out of this study. They are elaborate and lengthy, and would necessarily tax the energy of the compositor and the reader. The same considerations have actuated me in giving round figures only. Whenever the decimals exceeded 0.5, a unit was added to the figure, while lesser decimals were discarded.

#### A. CURATIVE CASES

The number of curative cases tabulated amount to 1,101, of which 952 were treated with pertussis vaccine (three or more injections) and the rest (149) with drugs. We had planned at the outset to have an equal number of cases of each class; but we found it difficult to carry out this plan in practice. In the early days of the clinic we had an overwhelming number of drug cases because parents did not trust the "needle" treatment. Later on, with the increasing popularity of the vaccine treatment, it became difficult to secure an adequate number of control cases. Guardians could not be persuaded to go home without an injection, and refusal to give it to their charges would invariably result in lack of attendance.

TABLE 1.—AVERAGE DURATION OF CASES TREATED WITH VACCINE, AS COMPARED TO THOSE TREATED WITH DRUGS

| Treatment | No. of Cases | Time Treatment Began During Paroxysmal Stage | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | ½ week | 1½ weeks | 2½ weeks | 3½ weeks | 1½ months | 3d month* | 6th month or over* |
| Vaccine | 952 | 210 | 303 | 196 | 151 | 54 | 36 | 22 |
| Average duration of paroxysmal stage (in days) | 37 | 22 | 16 | 26 | 45 | 64 | 89 | 322 |
| Drugs | 149 | 39 | 25 | 24 | 50 | 5 | 3 | 3 |
| Average duration of paroxysmal stage (in days) | 50 | 40 | 52 | 39 | 40 | 82 | 102 | 361 |

* The figures in these two columns are given only for the sake of completeness, the duration being too variable for any definite conclusion.

*Duration.* — The total average duration of the paroxysmal stage of the 952 vaccine cases, irrespective of the time when treatment was begun, was nearly thirty-seven days, while the 149 drug cases had an average duration of over 50 days.

The paroxysmal stage of pertussis is given by various authorities as from 4 to 6 weeks; and since many of the patients who applied for treatment were whooping for a longer period (some even as long as ten or twelve months, according to the guardian), it would be manifestly inaccurate to pass on the duration of the paroxysmal stage without taking into consideration the length of time elapsed before treatment was begun.

This becomes evident by a glance at Table 1, which shows the total average duration of cases treated with vaccine, as compared to those treated with drugs.

This table seems to indicate that the second week of the paroxysmal stage happened to be most favorable for vaccine treatment, the duration being a little over sixteen days for cases whose treatment began about the tenth day. In averaging up all the cases in which vaccine treatment was instituted before the expiration of the third week of paroxysms, we obtain a decidedly low figure as compared to similar cases under drug treatment. The 709 cases in which pertussis vaccine

* From the Bureau of Laboratories, Department of Health, City of New York.

* Summary of the results obtained by the Bureau of Laboratories of the New York Department of Health and of over 180 private physicians and health officers.

* Owing to lack of space, this article is abbreviated in THE JOURNAL by omission of tabulated physicians' reports on pertussis vaccines. The complete article appears in the reprints, a copy of which will be sent by the author on request.

was given before the end of the third week had an average duration of a little over twenty days, while the eighty-eight patients treated with drugs whooped for nearly thirty-two days.

Before these figures were tabulated, our impression had been that the *earlier* vaccine treatment is started, the better; but this table shows that there may be such a thing as starting *too early*. If this is a fact, I have no explanation except perhaps the old one of the "negative phase." It is quite possible that, in the first week of the paroxysmal stage, the organism is at its lowest as far as its active immunity-producing power is concerned, and if this is so the administration of vaccine may cause more reaction than is necessary. This assumption might explain some very protracted and complicated cases in which vaccine is begun during the first week of the whoop; but it would not explain the protracted cases treated with drugs.

The fourth week of the whoop seems to be slightly more favorable for the drug than the vaccine treatment. I am at a loss to explain this seeming paradox, otherwise than by ascribing it to mere accident. This exception, however, should not invalidate the claims made for the superiority of the vaccine over drug treatment. One must bear in mind that in every class of the cases, whether treated by vaccine or by drugs, in the first week or after a history of twelve months of whooping and vomiting, we had patients who would stop whooping within a week of treatment. This only illustrates the value of a large number of cases for the correct interpretation of the action of a new therapeutic agent.

*Severity of Paroxysms.*—More significant, perhaps, than the shortening of the paroxysmal stage, is the influence of vaccine on the severity and frequency of paroxysms. The striking amelioration in the general well-being of the patient, the return of sleep, appetite and the prompt cessation of vomiting has been commented on by nearly all those who have had occasion to administer pertussis vaccine. This is more constant than the shortening of the disease, as may be seen from the reports of the physicians given in Table 4.

In a large majority of cases the mother or guardian would begin her first report by saying: "The child slept much better after the injection." The only exceptions to this rule were the few cases which showed marked reactions. In cases treated with drugs, the severity is not abated but the frequency of the paroxysms is lessened as long as the treatment is continued. The withdrawal of antipyrin, however, invariably marks a recrudescence in the frequency of the paroxysms.

*Complications and Sequelae.*—These were few in both the vaccine and the drug cases. We have records of only nineteen deaths among 5,000 patients treated with vaccines (twelve from bronchopneumonia, six from convulsions, one unknown) and twenty-two deaths among the 300 odd cases treated with drugs (14 from bronchopneumonia, eight from convulsions). Most of these deaths occurred in the first week of the treatment before either the vaccine or antipyrin could have had any action.

The postparoxysmal cough, however, is distinctly shortened under vaccine treatment.

The question of complications and sequelae has not been thoroughly studied, and would bear further investigation.

### HOSPITAL CASES

We have on file sixty cases of whooping cough, in practically all of which the patients whooped over three weeks, treated with pertussis vaccine at the Willard Parker Hospital without apparent improvement. Dr. Goldstein, who has studied these cases, does not think that the vaccine has any influence in chronic cases. The figures in Table 1 would seem to show that these chronic cases do better than under drug treatment. Our Dr. Abramson, however, who has taken special interest in these chronic whoopers, is of the opinion that they are distinctly benefited by pertussis vaccine.

It is quite possible that certain factors in routine hospital handling would tend to impair the resistance of the patient and thereby lower the power to produce immune bodies. I have previously drawn attention to the factor of ventilation. One may also add the liability of hospital cases to have severer and complicated attacks, and also the possibility of a weakened physique due to inadequate nursing and poor economic surroundings previous to admission.

### INCOMPLETE CASES

In addition to the complete cases (that is, those in which the patients received at least three vaccine injections and whose subsequent history was followed up) there are a large number in which the patients either (*a*) had only one or two injections, or (*b*) were treated first with drugs and later with vaccines or vice versa.

TABLE 2.—AVERAGE DURATION OF CASES TREATED IN 1915, ACCORDING TO MONTH WHEN TREATMENT BEGAN

| Month | Duration of Paroxysmal Stage (Days) | |
|---|---|---|
| | Vaccine | Drugs |
| January | 28 | 68 |
| February | 25 | 46 |
| March | 27 | 45 |
| April | 23 | 54 |
| May | 28 | 53 |
| June | 26 | 40 |
| July | 32 | 48 |
| August | 46 | 52 |
| September | 29 | 49 |
| October | 32 | 53 |
| November | 35 | 55 |
| December | 30 | 65 |

(*a*) With the exception of some of the chronic cases referred to, one or two injections had no effect on the duration of the disease. The severity of the paroxysms, however, seems to be modified even by one injection. The duration of the whoop, as well as that of the first paroxysmal stage, seems to be the same as that of drug cases or in many cases (40 per cent.) actually higher. Lack of proper care might explain this.

(*b*) The thirty-nine mixed cases have to be looked on as failures of the vaccine as well as the antipyrin treatment. Their total average duration was fifty-nine days of paroxysmal cough. The patients who had to be switched over from one treatment to another were such as seemed to "go to pieces." Ten of them died subsequently (six from bronchopneumonia, one from measles, two from convulsions, one from poliomyelitis).

*Effect of Season on Treatment.*—Owing to the fact that most fatalities occur in August, it seemed desirable to tabulate the results of both vaccine and drug treatment according to the month in which treatment began. Table 2 shows the average duration of the cases treated during each month for the year 1915.

While it would be rash to draw any definite conclusions from this table, which contains complete figures for the year 1915 only, it is nevertheless interesting to

note that the duration of the vaccine cases tends to follow the usual curve of the yearly late spring and summer recrudescence of the disease. Thus the highest average duration of vaccine cases occurs in those treated during the month of August. The cases treated with drugs, on the other hand, attain the longest duration in January, with high points in December and November; the months of October, April, May and August show also a very long duration, that is, higher than the general average of fifty days, while only the month of August shows a higher figure than the general average of thirty-seven days for vaccine cases.

As to the duration of the paroxysmal stage under vaccine treatment, depending as it does on the time treatment is instituted, the information gained from this table would be incomplete unless the duration of the disease before admission should be tabulated for each month. This would necessitate an enormous amount of labor, which for various reasons had to be relegated to the future.

*Types of Vaccine.*—It is equally regrettable that no minute comparative study of the various vaccines supplied to the clinic by Dr. Anna W. Williams could be made. The floating clientele of the dispensary, and the lack of sufficient time and help to do the necessary follow-up work seemed to combine against a thorough investigation. Besides, it is not always possible to continue the injection of a vaccine which appears to aggravate the condition of the patient, especially when this patient is a child, helpless and poor. A good deal of switching, therefore, from one vaccine to another occurred.

A solution of sterile milk, however, which was sent to the clinic having the same appearance as the regular pertussis suspension was promptly recognized, owing to the negative results and to some quite marked reactions.

With this exception, all other vaccine seemed to be equally potent, except old strains or old suspensions of new strains of pertussis bacilli. This is merely an impression, as I have no reliable figures on the subject. The results of an influenza vaccine collated by one of our workers are said to be equally good. While it is not out of the range of possibility that any protein may help to increase the general resistance of the body, our figures are too few to support Vaughan's theory. On the other hand, some of those cases which seem absolutely refractory to pertussis vaccine may really be influenza infections, and in such cases an influenza vaccine could be of value.

*Dosage.*—It seems that at least three injections are necessary to make a lasting impression on the disease. Cases in which recovery took place too quickly, that is, after the first injection, were classified as doubtful, and are not included in this study.

During 1916 we found that some patients would have a relapse from two months to five days after the cessation of paroxysms. The following successful procedure was, therefore, adopted to ward off any recurrence:

To a child over a year old, an initial injection of 500 million bacteria is given; at the end of forty-eight hours another dose containing 1 billion is administered, and after the lapse of another forty-eight hours 2 c.c. (2 billion) are injected subcutaneously.

After an interval of five days the child is examined again, and if the paroxysms and the vomiting have ceased, is treated with cod liver oil or other tonics. If the paroxysms are much milder but still persist, a dose of 4 billion vaccine is given, followed by 8 billion in three days, and 10 billion after another lapse of three days.

Should the paroxysms become more violent after the first three injections, a week would be allowed to elapse before the second series of three injections are given, and instead of 4 billion this series is started with only 2 billion.

### B. PROPHYLAXIS

Over 600 children were given prophylactic injections of pertussis vaccine; not all, however, gave a clear history of exposure. In Table 3 only those who were actually exposed to members of their own family or playmates living next door for two weeks or less have been considered. These 368 cases, as will be seen from the table, were divided in two classes: (*a*) those already showing symptoms of the disease, such as cough and even slight vomiting, to whom the vaccine was given with the intention of aborting the disease, and (*b*) those who, although exposed constantly to the disease for two weeks or less, had not developed any symptoms, and to whom the administration of pertussis vaccine was intended to act as a true prophylactic.

Thus nearly 37 per cent. of the patients treated with vaccine contracted pertussis, while over 63 per cent. did not. Out of those showing symptoms, nearly 47 per cent. contracted it, while in over 53 per cent. the disease was apparently aborted. The patients showing no symptoms whatever were nearly all protected (94 per cent.). This would tend to show that once the disease has invaded the organism it is much harder to prevent the development of the paroxysms than in cases free from symptoms. All those treated with drugs, eleven cases in all, seven showing symptoms and four not showing any, contracted the disease except one patient, who showed no symptoms. The duration of the ten drug cases averaged fifty days of paroxysmal cough.

TABLE 3.—PROPHYLACTIC CASES

| | | Number Contracting Pertussis | Duration, Days | Number not Contracting Pertussis |
|---|---|---|---|---|
| Number of cases showing symptoms | 277 | 130 | 17 | 147 |
| No symptoms | 91 | 5 | 17 | 86 |

These figures should be read in the light of our epidemiologic studies, which have taught us that there are quite a number of children who seem to be naturally immune to the disease.

That the vaccine acted as a real prophylactic in many cases may be assumed from the following fact: nine of the patients who did not contract pertussis developed more or less severe subconjunctival hemorrhages but no other symptoms. The textbooks ascribe these hemorrhages wholly to the violence of the cough, which ruptures the tiny blood vessels of the conjunctiva. These nine cases, together with a few others which were observed in very mild attacks of whooping cough, would warrant the revision of this theory. It would be more likely to assume that the Bordet-Gengou bacillus produces some toxin which acts on the walls of special blood vessels, causing a extravasation of the blood.

Another significant fact brought out by Table 3 is the duration of the paroxysmal stage among those who contracted the disease. It is almost the same in both classes, a little over seventeen days in those who showed no symptoms and slightly less than seventeen days in those who already had some symptoms. In

both classes the attacks were very mild, while in the few cases treated with drugs not only was the average duration a little longer than that of the curative cases but also the severity remained unaffected.

It is interesting to note that the duration was still a trifle higher in the prophylactic cases (those treated in the preparoxysmal stage) than in those treated in the second week of the paroxysmal stage.

### II. Results Obtained by Private Physicians and Health Officers

#### A. Curative

Table 4 shows in detail the results obtained by private physicians and health officers in the use of the stock vaccines from our laboratory. I need only add that they corroborate the findings at the whooping cough clinic.

Thus out of the 2,364 cases reported, the results were found to be satisfactory or excellent in 2,047 (87 per cent.) and negative or doubtful in a little over 13 per cent. (317 cases). Owing to temperamental differences in the interpretation of results, we have classified all returns marked "good," "fair," "satisfactory," "excellent," etc., under the heading "good results," which means superior to those obtained with drugs.

The results obtained at some other dispensaries are claimed to have been much better than at the whooping cough clinic. Notably Dr. Hoag,[1] at the Wilkes Dispensary, by using larger doses and by securing a more perfect attendance, has been able to reduce the duration to from sixteen to twenty days. Dr. H. L. F. Locke will shortly publish his results with our vaccine at the Hartford Isolation Hospital, Hartford, Conn.

Of the 1,314 institutional cases reported, nearly all the patients have been considered as benefited by the vaccine, as compared to the drug treatment which had been administered for years. The results in 499 of these cases (39 per cent.) were excellent, and the rest satisfactory, with the exception of sixty-seven doubtful and negative cases, mostly in hospitals.

In tabulating these results I have used the reporter's final estimation of his results, even when they apparently contradicted previous reports. Thus, Dr. S. Ginsburg's fifty cases were classified in the "doubtful" column, although previous written and verbal reports included several excellent results.

#### B. Prophylactic

Of the 239 cases listed in the prophylactic column, 216 (90 per cent.) were apparently protected, the results in twenty-one were negative (no history given), and in two, doubtful.

Besides these actual cases, some physicians, in answer to the question whether or not the vaccine was used prophylactically, merely answered "Yes" without giving the number of cases treated. The results obtained were given as: fair, satisfactory, apparently prevented, completely satisfactory, best as prophylactic, good, better than curative, twenty reports (number of cases unknown); doubtful, three reports; negative, two reports; total reports, twenty-five.

*Complications and Sequelae.* — Hardly any were noticed under vaccine treatment.

*Reactions.*—A few slight local and occasional rises of temperature in rare cases.

### Conclusions

The results obtained at the whooping cough clinic and by over 180 private physicians and health officers would warrant the routine administration of pertussis vaccine for both curative and prophylactic purposes.

The best time to institute the vaccine treatment, except as a prophylactic, is the first and second week of the paroxysmal stage.

When the proper vaccine is given and the method of the department is employed, the disease is materially reduced in duration and severity.

The presence of subconjunctival hemorrhages in prophylactic cases which were protected by the vaccine seems to point to its specific immunizing action against the paroxysms and to the fallacy of the hitherto accepted theory that these hemorrhages are due to the violence of the cough.

1265 Boston Road.

1. Hoag, W. B.: Am. Med., New Series, 1916, **11**, 255-265.

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## DIAGNOSTIC GROUPS OF CHRONIC GASTRIC DISEASE *

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In textbooks, diseases of the stomach are classified with apparent ease; but in practice one soon learns that cases are not fitted so readily into the place in which they belong. In fact, the decision as to what an individual case of "stomach trouble" really means from the standpoint of pathology is often one of the most difficult problems in medicine. Dyspepsia, indigestion and stomach trouble are all common complaints; but the physician's task is to decide what they signify and what organic change underlies and produces them.

In general the questions to be answered are these: 1. Are the symptoms really due to disease of the stomach itself, or only to disturbed function produced by disease elsewhere? 2. If the disease is actually in the stomach, what is its character? According to the answer to these questions, cases fall into more or less well defined diagnostic groups; but to recognize what place shall be assigned in the grouping is rarely easy and not always final, for subsequent developments may entirely change the conception and cause us to shift the diagnosis from one group to another.

The difficulties stand out more and more prominently, as experience grows; and the larger the number of patients seen, the more firm the conviction that error in interpretation is possible, even with the utmost care and attention to detail. These thoughts have prompted me to review the cases of chronic gastric disease observed during the past five years, from Jan. 1, 1912, to Jan. 1, 1917; to show what conclusions have been reached in patients presenting themselves for diagnosis; what diagnostic groups have been found practical, and by what characteristics these groups have been segregated. In all, 2,116 records have been collected in private practice during these five years, all of diseases of internal organs; and of these, 297 have been classified as gastric. This does not include the patients with gastric symptoms that proved ultimately to be due to disease of appendix or gallbladder or some other organ, but only those in whom, after careful sifting of all data, the stomach itself was considered to be the organ diseased.

* Read before the Sacramento Society for Medical Improvement, Sacramento, Calif., March 17, 1917.

GROUP 1: GASTRIC CANCER

This group makes the best point of beginning, because it is the most definite and affords least opportunity for error. The symptoms progress so rapidly and are so marked that they cannot be overlooked, while the outcome usually settles beyond question any lingering doubts. There have been twenty-eight cases recorded in this group during the past five years, all verified by operation or by necropsy; and it is significant that out of hundreds who sought advice for stomach trouble, few proved to have this most serious type of organic disease. The data on which diagnosis depends are not always the same, and this should not be expected. A cancer originating at the cardiac end of the stomach will very early give rise to dysphagia, with regurgitation of food soon after it is eaten, but may show free hydrochloric acid present, if stomach contents can be obtained; and no tumor may ever be palpable at any time. A cancer originating on the lesser curvature usually causes loss of appetite, bloating, heaviness and pain after eating, with loss of weight, strength and color; but may become very large before a tumor mass is palpable below the costal margin, or before free hydrochloric acid disappears from the stomach contents. A cancer originating at the pyloric end soon gives rise to obstruction, and in addition to other evidences of its presence causes nausea, frequent vomiting and ultimately dilation of stomach and food retention.

Several other points of importance in diagnosis stand out in a review of this group:

1. Two of the patients were under 40 years of age, one 37 and one 35. The third decade is no bar to the diagnosis of cancer, and other observers have reported it as occurring even in the second decade.

2. In twenty-three of the cases the duration of symptoms was set down as one year or less, in some only a few months, for short duration of symptoms with rapid progress is characteristic of gastric cancer. In one case, however, stomach trouble had existed persistently for twenty years, though the symptoms had grown much worse for only the previous six months. A second patient had a history of sour stomach, heartburn, belching and waterbrash at intervals for four years before the trouble became continuous and more severe, with loss of weight. A third had a similar history for fifteen years, and then one year of different and more severe trouble. A fourth had a history of recurring attacks of sour stomach for "years past," and could not tell that his recent symptoms were any different from those in former attacks. A fifth had a characteristic ulcer history for many years, and was finally operated on in 1912 for ulcer, and this was excised; on pathologic examination, however, the excised tissue showed beginning malignant degeneration in the ulcer edge. This patient remained well for two years, and then began to have symptoms and signs of cancer of the stomach from which he died six months later. All of these cases call to mind the possibility that cancer may develop on an ulcer base; and so the ordinary story of recent onset and rapid development of symptoms may be replaced by one of long-standing gastric disease.

3. In seventeen of the cases, stomach analysis showed complete absence of free hydrochloric acid, as expected. In five cases, no stomach contents could be obtained, because the tumor was at the cardiac end and the entrance to the stomach was blocked so that no tube could be passed. But in six cases the stomach contents showed free hydrochloric acid present in considerable amounts, varying from ten to twenty-eight degrees. The fact is certain that the presence of free hydrochloric acid is no bar to the diagnosis of cancer; and it is also equally certain, as will be shown later on, that the absence of free hydrochloric acid does not always mean cancer.

4. Tumor was found by palpation of the abdomen in twenty of the cases, but was not palpable in eight; yet in every one of the cases in which no tumor could be felt, its presence and location were distinctly shown on the roentgenographic plate. In dealing with chronic gastric disease, therefore, the only safe plan is to remember cancer first, and to make sure it is eliminated before considering any other diagnosis; and in any case at all suspicious, after history, physical examination and stomach analysis have gone as far as they can, roentgenographic plates must furnish their testimony before a verdict is finally rendered.

GROUP 2: GASTRIC AND DUODENAL ULCER

The propriety of including duodenal ulcer in this group can now scarcely be questioned. It has been proved that, in etiology and pathology, gastric and duodenal ulcers are identical. Their clinical history is so much alike that by this alone no man can tell them apart; and it is fortunate that the same treatment works well with each. It really matters little, therefore, whether the lesion is on one side or the other of the pyloric ring; and the safest plan in diagnosis is to include all chronic gastric and duodenal ulcers in one group, regardless of the exact situation.

During the past five years, ninety-two cases have been assigned to this group, of which fifty-five were considered to be gastric and thirty-seven duodenal. Twenty-three of these cases have come to operation, of which nine have proved to be gastric and fourteen duodenal. It is admitted without hesitation that several diagnosed gastric ulcers were found at operation to be duodenal; and one diagnosed duodenal proved to be really gastric. But it is a matter for congratulation that during these five years only one patient referred to the surgeon for chronic gastric ulcer was found to have no ulcer but a chronic appendicitis. It is significant that in this case, occurring early in the series, the patient was sent for operation without any roentgenographic plates having been made; and it taught a lesson that has never since been forgotten. One other case classified originally as chronic gastric ulcer in 1912 had to be transferred later to the group of gastric crises due to tabes, because by 1916 developments had occurred that made the later diagnosis certain. There may be other cases now reported in this ulcer group that are not correctly included; but all have been carefully sifted and every effort has been made to prevent error.

As to the methods employed in deciding what cases of chronic gastric disease belong in this group, they have been the usual and well recognized ones: clinical history, physical examination, gastric analysis, roentgenographic plates and fluoroscopic reports. The clinical history of these cases, if time enough is taken to elicit details, is characteristic and typical. The story that repeats itself over and over again in these records is of chronicity for years, in some cases for twenty, commonly for five or ten, rarely less than two or three; so that at once, by its long-standing symptoms, the case becomes suspicious. The history of periodicity is likewise noted in practically every case; of attacks

for weeks or months during which the symptoms persist, followed by days, weeks or months of remission or complete intermission. The most constant complaint is of pain; and so essential is this that without it the diagnosis of ulcer is always a dubious one. The site of pain, however, and its time of occurrence are not always the same. One patient locates the pain in the epigastrium, another in the right or left hypochondrium, another altogether or mainly in the back, or running through from front to back. Similarly one patient says pain comes on three or four hours after eating, another says two hours, another only one. Almost universally the story is that pain is relieved by taking food and does not recur for an hour or more afterward. Other symptoms described sometimes as accompanying the pain, such as belching, waterbrash, heartburn and nausea, are not constant and in no way diagnostic; and when they are much dwelt on in the history and pain is not the chief complaint, the condition probably belongs to some other group than ulcer.

There seems to be an impression that gross hemorrhage is a frequent occurrence in ulcer, as manifested by vomited blood or by tarry stools or both. In these records, however, it was an unusual event. In only eleven cases out of the ninety-two could any history of hematemesis or melena be elicited. In ten of these, blood was vomited; in three there had been tarry stools as well as bloody vomitus; and only two had a history of black, tarry stools, without blood vomited. One of these patients died following a series of large hemorrhages throughout three days. The necropsy revealed at the lesser curvature a large ulcer, with deep excavation down to the pancreas and an open vessel of large size in the base. Another patient, after a week of repeated hemorrhages, in spite of medical treatment to prevent, had a drop in hemoglobin to 25 per cent. After that no further hemorrhage occurred, so that two weeks later he could be operated on, when a hard indurated ulcer on the lesser curvature was resected, and a gastro-enterostomy done. This patient recovered and has remained well since. Three other patients in this group with lesser amounts of hemorrhage have been subjected to surgery. One of these had a saddle ulcer on the lesser curvature; but in the other two the ulcer was distinctly beyond the pyloric ring, on the duodenal side, though all had a history of vomiting of blood on several occasions.

Examination of the abdomen does not afford much direct evidence in chronic gastric or duodenal ulcer. Tenderness and rigidity are noted frequently over the gastric area, sometimes localized to one sensitive spot; but this occurs with other gastric disease besides ulcer and, on the other hand, is not always found even when ulcer exists. The presence of a palpable mass due to cicatricial tissue is very rare, and when such a mass is found it is wiser to look on it as due to something else. The discovery of a tumor is rather against the diagnosis of ulcer, and the characteristic finding is the absence of all objective signs over the stomach; but valuable indirect evidence is found by palpation of gallbladder and appendix areas and the possible elimination of disease there as a cause of gastric symptoms.

As regards gastric analysis, the condition expected in ulcer is hyperacidity; but it is a mistake to assign too much importance to this element in the diagnosis. Gastric ulcer may be present even with a normal or subnormal acidity; for, as Lockwood[1] states, hyperchlorhydria depends not merely on the presence of an ulcer but also on the location of the ulcer. In general, the nearer the ulcer to the pylorus, the higher the acidity; and with an ulcer on the lesser curvature, toward the cardia, the acidity may be normal or subnormal. The diagnosis must therefore never be rejected simply because no hyperchlorhydria is found; for no one factor is conclusive when taken by itself.

In the cases reviewed, the total acidity was over 100 in three; between 90 and 100 in eight; between 80 and 90 in sixteen; between 70 and 80 in nineteen, and between 60 and 70 in twenty-eight. If the range of normal total acidity is assumed to be from 40 to 60, as is the usual rule, there were thus seventy-four of these cases which showed a hyperacidity. But there were seven between 50 and 60 and six between 40 and 50, so that thirteen cases would be said to be of normal total acidity, while one was between 30 and 40, or subnormal. In the other four cases of the ninety-two, no gastric analysis was made; but the diagnosis in these was otherwise proved, by roentgenographic plates, by operation or by necropsy.

Occult blood in stomach contents is too common a finding after extraction of test meals to be of any value whatever as a sign of disease; and unless occult blood in feces is found after most careful preparation of the patient by days of meat-free diet, unless all other possible sources of bleeding from the gums to the anus have been eliminated, and unless it is persistently found, this sign has but little value in the diagnosis of gastric or duodenal ulcer.

In the evidence furnished by fluoroscopic examination and roentgenographic plates we have undoubtedly the greatest advance made in the diagnosis of gastric and duodenal ulcer during the past decade. Facts as to the size, position and shape of the stomach, its peristaltic activity, its emptying time, its contour and its possible defects are all of immense value in proving the significance of symptoms and secretory findings; while the contour and outlines of the duodenum, as shown by roentgenographic plates, many times demonstrate conclusively a condition that would otherwise remain obscure. So firm has become the conviction as to the value of the evidence obtained in this way, that without positive demonstration of the presence of defects in stomach or duodenum now known to be characteristic of ulcer, this diagnosis cannot be made with absolute certainty. The absence of all this evidence after investigation by an experienced observer should make one hesitate, no matter how suggestive the clinical history, the physical examination and the laboratory findings may be. But, on the other hand, a positive report of roentgenographic findings ought to have the support of symptoms and signs before it is interpreted to mean ulcer beyond the possibility of doubt; and one of the greatest pitfalls in the way of accurate diagnosis today is the readiness to accept the Roentgen report as final, and to slur the old and well tried methods of investigation, so long employed and so often leading to correct results before Roentgen rays were discovered.

### GROUP 3: CHRONIC GASTRITIS

Patients rarely die from this disease, so the diagnosis cannot be confirmed by necropsy. Surgeons never operate intentionally for chronic gastritis, so it is not so frequently demonstrated as some other pathologic conditions of the living. Even roentgenographic plates give no sign of its presence. Yet these cases

1. Lockwood, G. R.: Diseases of the Stomach, Philadelphia, Lea & Febiger, 1913.

present certain fairly well defined characteristics which identify them and permit them to be segregated from other forms of chronic gastric disease. In the past five years this diagnosis has been made seventy-eight times; and while in the main the cases so classified have been sufficiently well marked to cause no hesitation, the group as a whole has shadowy borders and is not so distinctly outlined as those of gastric cancer and gastric ulcer. With the distinction between primary and secondary gastric disease still in mind, no case has been called chronic gastritis that occurred only as an incident in the course of chronic heart or kidney disease, pulmonary tuberculosis, cirrhosis of the liver or pernicious anemia; but those alone have been included where the gastric disease was the only one to be found.

The symptoms of this affection are so varied that from them alone no conclusion can be drawn. Reviewing the histories of the cases in which this diagnosis has been made, the complaint most often found is of a sense of discomfort or distress coming on soon after taking food variously described as fullness, distention, bloating, or a sense of weight or pressure; sometimes this is spoken of as a dull ache, but never as severe pain. These feelings are caused by food soon after it is taken, not after an hour or two of comfort. Next in frequency complaint is made of belching and of frequent eructations of gas for a long time after meals; as this goes on repeatedly, relief is gradually obtained.

Compared with these two symptoms, of distress and gas after eating, all others are much less constant. Some patients complain of nausea. Some vomit more or less regularly after meals, bringing up the food just eaten, together with thick, slimy mucus. Some feel nauseated only when they rise in the morning, and retch and strain until they take food. Some regularly induce vomiting for relief. But vomiting has been found a much less frequent manifestation of chronic gastritis than most textbooks lead one to expect. In the seventy-eight cases in this group, it formed a part of the history in only fourteen. Appetite is not always poor; often it is reported as good, but patients fear to eat because food causes so much distress. Complete loss of appetite was a part of the complaint in only eighteen cases. Loss of weight is not the rule, and good nutrition may be maintained however much digestion seems to be impaired. In this series only twenty-five patients gave loss of weight as a symptom. Heartburn in a few cases is a great element in the discomfort, at times with sour food eructations, at times with only a hot, irritating fluid, when gas is belched. But, on the whole, "sour stomach" is an unusual feature of this form of gastric disease.

Reflex symptoms form a large part of the history, and may form so large a part as to distract attention from the stomach itself. Chief of these is headache, occurring either in the morning when the patient rises, after meals, with the other symptoms of indigestion, or only at intervals of days or weeks, with vomiting, lasting for one day and again disappearing. The pain may be only a sense of unusual fulness and heaviness, or it may be extremely severe and prostrating, as in the "sick headache" attacks with vomiting. Headache is often the presenting symptom in these cases, and of the gastric complaints little is said; but inquiry and investigation prove the existence of chronic gastritis as a basis, and treatment directed to this puts a stop to the headaches themselves. This has been the observation in twenty-one of the cases in this group. Other reflex symptoms occasionally noted are dizziness, depression of spirits, drowsiness habitually after meals, lack of energy, and general indisposition for exertion.

To explain what these symptoms mean, physical examination tells but little as regards the stomach; only tenderness is found with any frequency, and not always that. Roentgenographic plates and fluoroscopic examination are likewise negative. But the diagnosis rests on examination of stomach contents obtained after a test meal, which in chronic gastritis gives results that are positive, definite and diagnostic. The findings are so characteristic as to warrant their consideration in detail.

1. *Gross Appearance.*—The amount of material is small, only a few cubic centimeters, as a rule, though in other gastric conditions the amount obtained after the ordinary Ewald meal averages 100 c.c. In chronic gastritis the stomach contents come through the tube with difficulty, and often have to be stripped from it by force. The reason for the small amount and the difficulty in obtaining even this is the fact that the material is very thick and viscid and often semisolid. The bread eaten is poorly triturated, often in chunks, rarely in the pulpy, pultaceous state in which chyme should be. Not infrequently fragments of food particles are found that have been retained from some previous meal, such as bits of coagulated egg albumin, and shreds of meat fiber or fruit pulp. In seven cases of this series the contents were blood stained or contained blood in dark brown shreds, attributed to chronic congestion of the mucous membrane.

2. *Mucus.*—The diagnostic sign of chronic gastritis is the presence of mucus in stomach contents. It occurs in such abundance that its presence cannot be doubted, either free, in gelatinous masses, or intimately mixed with the bread in the test meal after removal, surrounding it and uniting it in a sticky, semisolid mass. The presence of this mucus is essential to diagnosis, and it was found in every case included in the group. Patients who vomit always mention this "slime" that comes up with their food. Those who vomit on rising, in the early morning, bring up this and nothing else but gas; and if the contents of the fasting stomach are extracted for examination, this is what is found in all chronic gastritis cases.

3. *Secretion.*—The most characteristic finding as regards gastric secretion is either complete anacidity or decided subacidity; and yet cases occur with normal acid values and a few apparently with hyperacidity.

(*a*) Anacidity: Among the cases in this group, thirty-eight were found to have complete absence of free hydrochloric acid by every test; of these, twenty-five gave a total acidity below 10, and thirteen a total acidity between 10 and 20, but with no evidence of free or combined hydrochloric acid in any.

(*b*) Subacidity: There were twenty-nine cases with a total acidity under 40 and free hydrochloric acid correspondingly decreased.

(*c*) Hyperacidity: Three cases presented a total acidity above 60, though in every other respect, in history, physical findings and gastric analysis corresponding to chronic gastritis.

(*d*) No analysis: It is a rule that in every gastric case there must be analysis of the stomach contents after a test meal; and any infraction of this rule calls for explanation. There were eight cases in this group in which no analysis was made; five of the patients were minors and their parents objected to the use of the stomach tube, while three other patients were vomiting so persistently that no test meal could be

retained. Nevertheless, by vomited mucus, by absence of free hydrochloric acid in vomitus, by history, by negative physical examination and by roentgenographic findings, as well as by recovery on routine therapy, these cases were recognized without hesitation and assigned to the chronic gastritis group.

Certain diagnostic problems presented by these patients are not always easy of solution. In the first place, any person with a history of several months' persistent indigestion and more or less loss of weight, with entire absence of free hydrochloric acid in stomach contents, should always create a suspicion of gastric cancer, even though no tumor is palpable in the gastric area. But by the absence of pain from the history, by negative roentgenographic plates and fluoroscopic report, and by prompt improvement under therapy, we are usually able to decide without much delay that a neoplasm does not exist. A good rule in a dubious case is to give the patient one month for therapeutic test, which usually suffices for careful study and observation and often takes the patient out of the class of patients who require exploratory operation for diagnosis. But in these cases one should always think of cancer first, and until this has been eliminated never diagnose chronic gastritis.

In the second place, at least twenty-five of these cases, with a total acidity under 10 and no free or combined hydrochloric acid, might have been assigned to a separate group called "achylia gastrica." But there seemed no particular object in giving these cases a special name. They all corresponded in clinical history, gastric analysis, presence of abundant mucus and negative roentgenographic plates to chronic gastritis; and there appeared to be no reason for assigning them a place by themselves. Not all achylia gastrica cases may originate from chronic gastritis; but as yet we have no proof for any other pathology.

In the third place, cases with normal acidity and particularly those with hyperacidity create suspicion of ulcer. But the absence of pain, the prompt appearance of distress soon after food is taken, and the presence of abundant mucus even though acid values are high, with negative roentgenographic plates and fluoroscopic findings usually suffice to settle the question. However, cases of chronic gastritis with hyperacidity may be recent, of only a few months' duration; and it has been proved that fresh ulcer, not yet cicatrized or deeply penetrating, may give no evidence on roentgenographic plates. Hence it is not wise to decide too promptly that ulcer does not exist in these cases, and best always to suspect its existence in every persistent hyperchlorhydria, until repeated observations and subsequent developments eliminate the possibility.

Finally there remains the large group of dyspepsias with subacidity or anacidity, that are secondary to other abdominal disease, such as chronic cholelithiasis, chronic appendicitis or chronic intestinal stasis. This group, as well as the neurasthenic stomachs in which no organic disease whatever can be found, are a source of great confusion in diagnosis, and are at times set down wrongly as chronic gastritis until later developments cause them to be shifted to their proper place. Some of this sort there may be among the seventy-eight recorded, but not because no effort has been made to recognize and exclude them.

### GROUP 4: GASTROPTOSIS

Prolapse of the stomach is a common occurrence; but there is no gastric history that identifies it, so it frequently goes unsuspected. Patients with this abnormality complain of stomach trouble; but when asked for details, their story may resemble that of cancer or ulcer or chronic gastritis or one of the gastric neuroses. It is only when special examination is made that gastric prolapse is found; but as this feature is peculiar and belongs to none of the other groups, it seems clear that cases with decided displacement of the stomach downward should be segregated, no matter what sort of stomach symptoms they present. During the past five years the histories and clinical data have been recorded in forty-seven cases of this sort. Many of these presented certain characteristics that repeated themselves over and over, so that gastroptosis really became one of the best defined and most easily recognized groups in the whole field of chronic gastric disease, even though the digestive symptoms gave no clue. The diagnostic data are as follows:

1. This is an ailment much more common in women than in men. Among the forty-seven patients, there were thirty-nine female and only eight male.

2. It is an ailment of small persons, fragile in build and light in weight. Of the forty-seven patients, ten weighed between 90 and 100 pounds at the time of examination; thirteen between 100 and 110, and five between 110 and 120. None weighed over 140. Of the male patients, some were of this light weight type, while others were tall, lean, slender and gaunt, and always had been so.

3. All complained of lack of vitality as well as of indigestion; all their lives they had been delicate in health, unable to do much without tiring, easily exhausted by effort, incapable of withstanding strain.

4. Many of them presented other complaints besides their chronic stomach disturbances and their lack of strength, particularly chronic constipation, pain in the back and right side, and inability to put on weight.

5. The trouble with digestion is usually of long standing but most variable character. Some present a picture of pain after taking food, and poor appetite, with loss of weight, of strength and of color that may cause suspicion of cancer. Some give a history of sour stomach, waterbrash, nausea, and pain appearing late after meals, with constant relief by soda or by more food, that closely mimics gastric ulcer. Some describe the characteristic sense of heaviness and weight coming soon after food, with belching, flatulence, headache and general lassitude during digestion that speak for chronic gastritis. Many cases, finally, present a mixture of symptoms that correspond to no type or group.

6. Physical examination reveals conclusively the low position of the stomach in the abdomen. In these small, poorly nourished persons its outline can often be plainly seen through the abdominal wall, lying with the greater curvature well below the navel. But to make certain that the stomach is prolapsed, inflation is the simplest method, by the well known procedure of giving the patient tartaric acid and sodium bicarbonate separately in solution and thus developing carbon dioxid. This distends and defines the stomach and makes its position plain; and consequently the greater curvature is found in these cases from 3 to 10 cm. below the navel, whereas normally the greater curvature lies about 3 cm. above. Physical examination also reveals in these patients a prolapsed right kidney, sometimes merely palpable, sometimes so far down that it can be caught and retained. All of the cases in this group showed this coincident nephroptosis, and in a

few the left kidney was palpable as well as the right. In many it is possible, when the bowels have not been made to move regularly, to outline the ascending, transverse and descending colon by retained fecal masses in them, and to determine that the transverse colon sags low in the abdomen often to the level of the pelvic brim. It thus becomes evident that gastroptosis is only one part of a general enteroptosis or visceroptosis which prevails to a greater or less degree in all this group of cases of chronic gastric disease.

7. Gastric analysis after a test meal gives a variable picture. Most cases show acid values that are normal or above normal. Of the forty-seven in this group, twenty-four gave a total acidity between 40 and 60; ten between 60 and 70, and three between 70 and 80, making thirty-seven in all of normal acidity or hyperacidity. The others all showed subacidity on gastric analysis, and two had no reaction at all for free hydrochloric acid with a total acidity of 4.

8. The most conclusive proof of the true condition present is furnished by roentgenographic plates, which demonstrate not only the existence but also the degree of ptosis more accurately than any other method. These plates also bring out the obstruction offered by gastroptosis to the exit of stomach contents through the pylorus, and show how often retention is a factor in causing the patient's distress.

Putting all these data together, it becomes easy to recognize this group of gastroptosis cases. They deserve a place by themselves, for they possess features not found in association in any other chronic gastric disease. Furthermore, as the object of all diagnosis is therapeusis, this group demands recognition; for without correction of the mechanical displacement of stomach, no other treatment offers any hope of relief for the gastric symptoms. Finally, in spite of any kind of treatment, these patients remain substandard and can never be kept even comfortable unless they learn to recognize their limitations and always to live within them; we can aid them but we cannot make their bodies over.

### GROUP 5: GASTRIC NEUROSES

It is well understood at the outset what gastric neuroses are *not*. In the first place, chronic gastric disease that presents the characteristics of any of the foregoing groups should be classified in one of them and not among the neuroses. Improved methods of diagnosis have greatly increased our ability in recent years to detect these organic diseases of the stomach, and so to restrict the group of neuroses. In the second place, chronic gastric disease that does not present characteristics identifying it with one of the foregoing groups is often really due to chronic appendicitis or chronic cholecystitis, and must not be classed as a neurosis until these have been carefully eliminated. Cases placed at one time among the gastric neuroses may later, because of new developments calling attention to the appendix or gallbladder, have to be shifted to a different diagnostic group of real organic disease. In the third place, chronic gastric disease that can be traced to any definite pathologic change in any other organ, as the heart, arteries or kidneys, has no rightful place among the gastric neuroses.

Gastric neuroses can best be classed as stomach manifestations of neurasthenia. They are distinctly disturbances of function, without discoverable organic change in the stomach or any other organ to account for them. Formerly this group was considered a large one, but little by little it has been contracted until now there are even those who assert that it does not exist. There is no justification for this extreme view; but the more experience one has the fewer cases he assigns to the group of gastric neuroses, and the less satisfied he feels to leave them there. Reviewing the work of the past five years, fifty-two cases are still found classified as gastric neuroses; but this by no means represents the number originally placed there, for many were from time to time shifted from this to some other more definite diagnosis, as new developments or manifestations gave a clearer conception of the real condition.

Much confusion has arisen in the past from the effort to recognize and to name too many varieties in this group. Practically the two functions of most importance to the work of the stomach are motility and secretion; and most cases of disturbed function come under one or the other of these two heads. The only other disorder deserving consideration is that of abnormal sensibility, which at times seems to be the true explanation for the patient's complaints.

1. Disturbance of motility is commonly known as *atony* or myasthenia. Of this neurosis only fourteen cases have been diagnosed during the past five years. Its characteristic features are early satiety at table, ability to eat but little before feeling too full; persistent flatulence and belching, and reflex headaches when food too coarse or heavy is eaten. The diagnostic sign on physical examination is the succussion splash hours after food has been taken. After the test meal, amounts are obtained by the stomach tube far above the average, as high as 200 c.c. at times or even above; while the normal amount does not exceed 100 c.c. These contents usually present on analysis an acidity normal or above normal, but no excess of mucus or other evidence of organic disease. Though these stomachs are lazy and slow to empty, they do not retain, and the fasting stomach in the early morning is found without refuse. The greatest difficulty in diagnosis lies in separating these cases from gastroptosis; for neurasthenic symptoms are common to both conditions; and in the so-called atony cases, the weak walls permit the greater curvature to sag below normal limits after inflation by carbon dioxid or after the barium meal for roentgenographic examination. There really seems good reason, therefore, to suspect that the cases we class as atony are in fact minor grades of gastric prolapse, and that the neurasthenia is a consequence and not a cause.

2. *Hyperchlorhydria*, without any organic disease found to explain it, has been diagnosed twenty-five times; but whether these cases were really neurasthenic manifestations or were due to undiscovered organic disease is a matter for doubt. The group certainly grows smaller and smaller as one comes to realize how many conditions may reflexly give rise to hyperacidity and "sour stomach." Some of these that have been recognized from time to time, besides the well known organic diseases of stomach, appendix and gallbladder, are: intestinal parasites, particularly tapeworm; atypical cases of exophthalmic goiter; eye strain from errors in refraction; chronic pelvic disease in women and prostatic disease in men; hemorrhoids, and minute hernias through the linea alba. Of the twenty-five cases diagnosed hyperchlorhydria and grouped with the gastric neuroses, eighteen were so recorded during 1912 and 1913, but only four in 1914, only three in 1915, and none at all in 1916. I have become con-

vinced, in other words, that this form of "nervous dyspepsia" seldom occurs, and that a diagnosis of hyperchlorhydria as a neurasthenic manifestation has little justification.

3. There remains a group that seems more truly neurasthenic than either of the foregoing, to which thirteen cases were assigned: a group characterized by all sorts of complaints about digestion, but with no evidence of disturbed motility or secretion or of organic disease of any kind. These patients do not tell the same story twice because their symptoms are so variable. They are a source of great exasperation to the physician because their complaints are so innumerable, so unusual and so little in conformity with any type of chronic gastric disease; and no sooner are they relieved of one set than another set appears.

In general, it can be stated that the group of gastric neuroses is the most uncertain one of all. We are still forced to resort to it at times in diagnosis, but it should be accepted only after every resource has been exhausted, in the effort to find a better explanation for the case so labeled. The attempt to reach the truth in the investigation of all gastric cases is fraught with difficulties, and at times we all make mistakes. But in this matter I have frequently found consolation in a passage from one of Osler's essays:

> Start out with the conviction that absolute truth is hard to reach in matters relating to our fellow creatures, that slips in observation are inevitable even with the best trained faculties, that errors in judgment must occur in the practice of an art which consists largely in balancing probabilities; start, I say, with this attitude of mind, and mistakes will be acknowledged and regretted; but instead of a slow process of self-deception, with ever-increasing inability to recognize truth, you will draw from your errors the very lessons which may enable you to avoid their repetition.

Shreve Building.

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## THE TEACHING OF PROTOZOOLOGY TO MEDICAL STUDENTS

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The importance of the protozoa as the causative factors in many grave diseases is thoroughly recognized today by every alert practitioner, particularly those whose labors carry them into tropical or semitropical zones. There is likewise a gradual awakening to the fact that many parasitic protozoa do not restrict their activities to those localities, but, on the contrary, are exceedingly ubiquitous. With the opening up of new trade routes and the broadening and development of commerce to the Far East, South America and Africa, and as a result of conditions which are developing with the progress of the European war, they are gradually establishing themselves in cooler climes. The malarial parasite has long been known too well in North America, and there is a growing realization that endamebic dysentery is not by any means a rare malady in the same territory. The medical schools of the United States will have to cope with this situation before long, and they can meet it only by extending their curriculums so as to meet the protozoological needs, not only of the men who will have to deal with conditions at home, but also of the rapidly increasing number of medical men who are answering the call to the tropics.

There has been no dearth of work on these organisms, and a vast accumulation of literature stands as a monument to the efforts of those who have reported their work and told of their methods of research into the protozoa. Singularly enough, however, little has been said or written on the exceedingly important matter of the teaching of protozoology to medical students. In the past it has been thought quite sufficient to give such instruction in the form, generally, of a brief course of descriptive lectures illustrated by charts or stained preparations. When specialists have given these courses they have often been so hampered by lack of time that it has been impossible to give an adequate presentation of the subject. When courses have been administered by some member of the faculty of a school, an instructor may have been selected whose own line of work was not sufficiently related to protozoology to enable him to do himself or his students justice. The tendency in many cases has been to lay most stress on the symptomatology, treatment and pathology of the diseases of protozoan origin, and while these things are of great importance, the result has been that the students have been given considerable instruction in medicine and little in protozoology. In a large proportion of cases they are more or less helpless as regards knowledge of the animals themselves, and hold a vague idea of the real appearance and mode of life of these important organisms. It is quite true that these students gain considerable useful information regarding the diagnosis and routine treatment of protozoal diseases, but this they should get anyway in the course of their work in clinical medicine, in which such instruction properly belongs.

It is not my purpose to criticize or belittle the work of the physicians who have done so much to advance our knowledge of protozoal diseases, or who have given so generously of their time and efforts to teach the subject from their standpoint. It is merely my aim to elucidate the fact that protozoology is one of the zoological branches, and should be taught by a zoologist who is a specialist in that group, and whose general familiarity with the field fits him to meet the problems of parasitology on a broad biologic basis where they belong.

I seek, also, to emphasize the fact that the relation of the protozoa to the medical sciences is not limited to the parasitic forms. Splendid material for experimentation in physiology, pharmacology and therapeutics, and pathology is afforded by species of protozoa which are easily obtained and readily handled. The problems of fertilization, growth and development present themselves in attractive form to the protozoologist, and their intimate relation to the medical sciences is self-evident.

The tendency on the part of medical men to place the parasitic protozoa entirely apart and separate from the other members of that great phylum has undoubtedly retarded progress in our knowledge of the life activities of the parasitic forms, and incidentally in the handling of problems in disease, to a serious extent. After all, the parasitic species are governed by the same general physiologic laws which regulate the activities of the free-living forms. It is true, there are many modifications and adaptations seen in the parasites which conform to the degenerative phenomena exhibited by parasitic animals in general; but, on the other hand, many parasitic protozoa show a

complexity of structure and mode of living which places them on a plane with many of the more highly organized free-living species. Species of the genera *Balantidium*, *Nyctotherus* and *Ophryoscolex*, for example, are parasites whose morphology and habits closely resemble those of free-living forms—in fact, it might be said that they are protozoa which have simply chosen a life in the fluid contents of the digestive tract instead of a roadside ditch. One would hardly regard the trypanosome with its elaborate motile apparatus as an organism showing marked signs of degeneration as a result of a parasitic mode of life. In principle it differs little from many free-living forms of the group of flagellates. Again, the intestinal amebas differ very little from many species of free-living amebas barely enough to justify generic distinctions.

The protozoa may live in surroundings of great variety. Some may inhabit roadside ditches. Others are found in stagnant waters and those containing decaying organic matter, others live in moist earth or on mosses, a vast group are found in the sea, while still others have found favorable conditions for obtaining food from the body fluids and tissues of other animals or of plants. Some of those which live free nourish themselves after the manner of animals, while some exist as saprophytes. Precisely the same conditions obtain in the parasitic forms. The methods of reproduction in the parasitic species do not differ except in certain details from the methods seen in the living forms. In other words, the most striking point of difference between the parasitic protozoa and those which lead a free life is that they have adopted, as an environment in which to live, the body cavities or tissues of animals or plants, instead of the sea, a pond or a tuft of moss. The fact that these forms give rise in some cases to certain diseases is, to a large extent, only a side issue which plays a minor rôle in the study of the organisms themselves. That the parasites live in this manner no more stamps them apart from the other protozoa than obtains in the case of other species which live on mosses or in moist earth.

All of this leads us inevitably to the conclusion that in order to meet the problems, the investigator into the parasitic protozoa must have not only a broad knowledge of the entire group, but more than that, a sound biologic training which will guide him far afield from the bedside, in search of the solution of many medical and sanitary problems. To do effective work he must be familiar with the comparative morphology, physiology and cytology of the protozoa, and if he lacks that equipment he will be terribly handicapped from the very beginning of his work.

The protozoologist who has elected to specialize in work with the parasitic protozoa is none the less a zoologist. He is far more interested in the fortunes and fates of the parasites than he is in those who are infested with them. The patient interests him mainly from the standpoint of the influence his reactions exert on the parasite. Pathologic changes occurring in tissues interest him no more than the extent to which they influence the parasite. His work brings him to the borderline of medicine, hygiene and pathology, and if he is to teach the subject he must aim to reach the frontiers of these related branches; but he should cross no farther than is necessary to establish a firm footing for his students. To the work in the other departments the students must then apply the knowledge of the organisms he has given them. In doing this the protozoologist does no more violence to medical tradition and precedent than does the teacher of chemistry, physiology or bacteriology.

The zoologist has been one of the last to gain entrance to the medical school, but his admission has been the direct result of the progressiveness of the physician of today and not the fruit of any campaign conducted by the zoologists. The zoologist has found several problems awaiting him, and not all of these have to do with the actual teaching. A year's work at teaching protozoology to the average graduate medical student is apt to lead the teacher to the conclusion that, of all the professions, medicine is by far the most "practical." From the time he starts his work in a given school until the happy day when he succeeds in making it clear to his medical pupils that the sum total of importance in connection with the protozoa to the physician is not limited to staining reactions, the inoculation of animals, mixing of culture mediums and the efficacy of ipecac and emetin in endamebiasis, he will hear the never ending demand from many of his students for "practical courses."

Now, in my opinion, it is quite possible to make an exceedingly workable combination of the "practical" and the scientific in this work. That is to say, it is quite feasible to give to medical students instruction in protozoology which will fit them to deal with medical problems without going too deeply into the more abstract biologic problems. Much of the trouble in the past has been due, I believe, to the fact that while we have had many men who have achieved deserved success in the prosecution of researches into the pathogenic protozoa, we have had few who were willing to forego the fame which comes to the successful investigator and devote their energies and capabilities to training men for the work. It does not necessarily follow that a man who has become noted as a result of his publications is particularly fitted to teach the subject. In many instances the contrary is the case. Where research is the dominant idea in a man's mind, he cannot put his best into teaching when, if he does so, his problem must be neglected.

The protozoologist only makes a concession to common sense when he develops his required courses in the undergraduate school along lines which shall enable the student to recognize the important species, know something of their life cycles and general activities, and handle them at the bedside and in the clinical laboratory. He should discuss parasitology to the end that this class of students should understand the biologic basis of sanitary measures. But he should teach his students, above all things, the morphology, physiology and life cycles of the animals; and this he cannot do with stained preparations alone.

Many medical men I have met have frankly confessed never to have seen a living ameba or a trypanosome. Most of them have seen stained specimens at one time or another, but have found them of little aid in the identification of the living organism. In view of the wealth of comparative material which may be secured even in the neighborhood of the great cities in the United States, this is, to say the least, regrettable. Parasitic material, it is true, is not always available at the right time, but comparative material generally is. Let me illustrate this point with a few examples:

I am in the habit of leading my students up to the parasitic amebas by a fairly comprehensive preliminary study of the small fresh water amebas of the genus *Vahlkampfia*. In size and general appearance of the

nucleus and cytoplasm, it resembles many of the parasitic species. The structural differences between *Vahlkampfia* and *Endameba* are not sufficiently great to lead the student too far astray if the teacher is careful. The material is abundant, and there is not lost, in searching through a smear of feces for a single lethargic individual, valuable time which might be spent more profitably in the study of active trophozoites, and dividing and encysting forms. It is relatively easy to secure amebas which may be studied on the slide and which will show not only division stages and encystation, but the development of flagellated stages as well. It is only in rare instances that these things are seen in clinical specimens. Many free-living flaggellates which may be cultivated in abundance illustrate the morphology of that group in a beautiful way, and among the infusoria may be found many of the *Heterotrichida* which will furnish the basis of study of the *Balantidium*. Exercises in physiology and microscopic technic may be beautifully worked out with these, after which the student may profitably turn his attention to an intensive investigation of the purely parasitic forms which he must study under more difficult conditions, but which he is enabled to attack with more definite knowledge of what he is to see. If living material from human beings is not available, it is almost always possible to secure comparative material representing the principal genera, and it should be employed not only to illustrate the form and activities of the living animals, but also to illustrate relationships between species parasitic in man, and those found in the lower animals and plants. Too little attention has been paid to these relationships in the past.

I have found that it is quite possible to give my undergraduate students entirely adequate instruction along these lines in a course of sixty-eight hours; but the syllabus is considerably amplified and extended in the graduate school.

In the graduate school the principal course should bear particularly on the parasitic species, but it should be sufficiently broad in scope to give the students a good survey of the entire field and ground them thoroughly in the fundaments of the entire science. There should, however, be other courses covering special cytologic training, and still others which should present other phases of protozoology which have a bearing on the practice of medicine.

In the required course the classroom work should be divided so that about one third of the time is devoted to didactic lectures bearing on morphology, physiology, taxonomy, cytology and parasitology. The remainder of the classroom work should be administered as seminars in which the students report on assigned literature. Each student should be required to defend his presentation of a topic against the criticisms of his fellow students, the instructor guiding the discussion and elucidating points which may not be clear. The laboratory work should run concurrently, the points brought out in the lectures and seminars being illustrated with fresh and stained material. Adequate time should be spent in training the students in the standard technical methods and study of the living as well as the fixed and stained organisms. The course as a whole should be a systematic review of the protozoa as a group. It should be taken up on the comparative basis and deal, therefore, with free-living species, and species parasitic in the lower animals and in plants as well as those infesting man. There should be a discussion of the evolution of disease from the standpoint of the development of the parasitic species. Such a course may be given in 102 hours.

An elective course may be offered consisting of lectures and demonstrations reviewing the field from the standpoint of general biology. This course should include a discussion of topics having a broad general relation to the medical sciences, such as the problems of senescence, fertilization, growth, regeneration and heredity as seen from the standpoint of the protozoologist. There should be an exposition of the application of experimental methods with the protozoa to physiology, pharmacology and pathology. Thirty-four hours may be so expended.

Another elective course should be offered for the benefit of those students who are about to engage in research on the protozoa. It should consist of a thorough treatment of the technical methods with the protozoa and the principles underlying these methods. It should not merely be a drill in staining and dissection, but should also include a study of the methods themselves with the idea of imparting to the student the basis on which the methods rest. Such a course presupposes previous work with the protozoa and should outline methods of attack on every type of problem from the study of the living organisms, through their fixation, staining and sectioning, methods with arthropods, breeding of pure and pedigreed lines for experimental work, administration of drugs and chemicals to the animals, up to a brief treatment of the statistical methods employed in the interpretation of results.

Finally, courses carrying graduate credit should be offered for students who desire to work up a problem in protozoology as a basis for a thesis or dissertation.

The field of dentistry has also opened to the protozoologist, and in Manila we have already taken advantage of it by giving a course in protozoology to students in the school of dentistry. The course devotes twenty-four hours to a brief general review of the protozoa as a group and an intensive study of spirochetes and protozoa found in the mouth. Training is given in methods of collecting and studying material, and the course promises to form a valuable accessory to the dental curriculum.

Much more might be said on the general topic of the teaching of protozoology to medical students, but this should serve as a fair outline of what may be accomplished. The main problem from the standpoint of the teacher, aside from the reluctance of a large group of graduate physicians to enter into work which has not a direct clinical bearing, is the poor preparation of a large proportion of the students. In the undergraduate school this is not a serious factor because the work there is very elementary and the students are fresh from their college work in zoology; but in the graduate school it presents a formidable and time-consuming problem. There, many students whose work in the purely clinical branches is unquestionably of a high order are wofully deficient in the most elementary knowledge of biology or even zoology. This condition entails the giving of considerable elementary instruction which should be unnecessary. But it is a problem which is exceedingly difficult to meet, for it would be unfair to bar from a postgraduate school students of ability in the clinical branches who were deficient in biology. It is a problem which for the present will have to be met by the zoologist the best way he can. Another difficult problem is presented by the student who, lacking previous training in protozoology, desires to undertake a research problem.

The disposal of individual cases may well be left with the instructor, but the proposition as a whole should be discouraged. Occasionally a case may arise in which a special line of work may be undertaken without previous study of the protozoa; but in most instances the student quickly discovers his weakness and applies to the instructor for aid. Such aid, of necessity, involves a course of special instruction which it is not practicable to give outside of the regular courses. With the protozoa it is scarcely possible for a student to obtain the best results from a study of one particular species or order without a knowledge of the group of protozoa as a whole.

In the foregoing I have tried to outline a scheme for instruction in protozoology to medical students. To one who is not particularly conversant with the subject, the program may sound exceedingly formidable and unnecessarily detailed; but from my experience in teaching not only Americans, but Filipinos as well, I have found it not too hard for any of them. Indeed, the scope of the work I have outlined is really no broader than the usual course in bacteriology, and it seems to me to be fully as important. After all, the protozoologist must be largely self-developed, and must build up on such a foundation as I have outlined. But a small proportion of students so trained take up protozoology as a specialty. That, in fact, is not the end sought. The endeavor rather is either to fit the men for more advanced medical and sanitary work, or to give such of them as fancy it the foundation on which they may, by their own efforts, become specialists in that group which to me is formed of the most fascinating members of the animal kingdom — the protozoa.

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# A CASE OF VOLKMANN'S ISCHEMIC CONTRACTURE

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This case serves to emphasize the danger of improper or indifferent application of plaster-of-Paris bandages, and the value of early treatment of the deformity following prolonged ischemia.

## REPORT OF CASE

W. H., boy, aged 8 years, fell, Aug. 14, 1915, and injured his left forearm. A physician found a fracture of the forearm, and applied a plaster-of-Paris dressing extending from the elbow to the fingers and completely including them. According to the mother's story, the only protection to the limb under the plaster was a single layer of ordinary gauze. No cotton or other similar material was placed between the fingers, which were entirely hidden from observation. The plaster was left on three weeks. During this time the boy did not complain of any pain, but he could not move his fingers, which were evidently cramped together. At the end of three weeks the physician for some unexplained reason found it necessary to give the patient an anesthetic to remove the plaster, which was apparently extremely thick.

On removal of the plaster it was found that the boy had no power in his hand. The skin about the wrist was discolored and bruised, and the hand was swollen. Nothing was thought of this condition until the lapse of one week when, the swelling having diminished, it was observed that the hand and fingers were contracted and the boy had very little power. Becoming alarmed, the mother brought the boy to my clinic at the Lebanon Hospital Dispensary.

The hand was still moderately swollen, and the skin of the hand and fingers glossy. The wrist and fingers were flexed. When the wrist was passively extended the fingers became markedly flexed, and attempts to extend them were painful and unsuccessful. When the wrist was flexed, the fingers could be straightened out. We were dealing, therefore, with what was evidently the typical deformity of Volkmann's ischemic contracture. At the middle of the forearm there was a circumferential thickening due to the callus formed at the site of fracture.

The treatment for Volkmann's contracture advised by Mr. Robert Jones was promptly instituted. Individual splints were applied to the palmar surfaces of the fingers, and by means of adhesive tapes the fingers were gradually stretched into complete extension. The splints were kept on continuously, except for a brief period each day when they were removed for massage of the fingers, hand and forearm. At the end of one week the fingers could readily be fully extended without pain when the wrist was only moderately flexed. The finger splints were then removed and an aluminum splint was applied to the flexor surface of the forearm, extending from near the elbow to slightly beyond the finger tips. The splint differed from that recommended by Mr. Jones, who uses a single sheet of aluminum from elbow to fingers in addition to the individual finger splints. The distal part of the splint I used was divided by longitudinal indentations, thus providing a separate extension for each finger. I believe this is an advantage, as we have one instead of several splints to deal with, and in addition the extensions for the fingers are part of one and the same splint. At first the splint was bent down at the wrist to such an angle as to allow easy and complete extension of the fingers. Two straps of webbing held the brace to the forearm, and strips of adhesive plaster were used to keep the fingers extended. About every other day the splint was straightened a little and finally bent backward into hyperextension, watch being kept that the fingers were always extended. Twice daily the brace was removed and the hand and forearm massaged and manipulated.

Within one month the patient's hand had been extended to 150 degrees, and active flexion and extension of the hand and fingers were rapidly returning. Two months later, in February, 1916, the boy had such excellent use of his hand, the swelling and glossiness having entirely disappeared, that the apparatus was discarded. The hand was examined again, April 14, 1916, when it was found that there was a complete anatomic and functional cure.

## COMMENT

This case demonstrates the importance and necessity of adequate protection under any plaster dressing. When plaster is applied to a limb which is deformed or diseased but not likely to swell, we may apply with safety a plaster dressing over only a slight amount of protection, as a flannel bandage. In the case of an injury, as a fracture, however, in which the trauma to blood vessels causes extravasation of blood and consequent swelling, it is essential to surround the affected limb with some such material as sheet cotton, which is compressible and will allow for swelling without danger of undue compression. It is further advisable to leave the fingers exposed or at least accessible to observation. We must instruct the patient that the color of the fingers must at all times be normal, and the patient should at all times be able to move them. The ability to move the fingers freely is, of course, positive proof that the plaster is not applied too tightly. Swelling, extreme pallor or cyanosis of the fingers or inability to move them are danger signals which demand immediate attention. Should such an untoward condition arise, we must promptly remove the splint and apply another more cautiously.

It should be remembered that for purposes of fixation a thin plaster is just as effective as a thick one.

The very favorable result in this case must, of course, be attributed to the institution of the Jones method of treatment soon after the deformity appeared. During the past year, at Dr. Royal Whitman's clinic at the New York Hospital for Ruptured and Crippled, I have seen several similarly favorable results. These were all in patients who applied for treatment early. The key to the successful management of ischemic contractions lies in early and persistent stretching and active and passive motions. When the deformity is of long standing, there are trophic changes in the skin, hardening of the musculature of the forearm from fibrous tissue replacement of the muscle tissue, and atrophy of the nerves, all of which militate against success by any known method of treatment. In these old cases we can expect only improvement.

CONCLUSIONS

1. In applying a plaster bandage to an injured limb, the limb must be sufficiently protected by sheet cotton, flannel or similar material.

2. The fingers should be exposed to observation, and the patient must at all times be able to move them.

3. Unusually severe pain, extreme pallor, cyanosis or swelling of the fingers call for prompt removal of the plaster.

4. Should a contracture develop, it must immediately be treated.

5. The method advised by Mr. Robert Jones is the most effective one.

1 West Eighty-Fifth Street.

## A CASE CONFIRMATORY OF THE SPINAL FLUID COMPRESSION SYNDROME

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DETROIT

Ayer and Viets[1] recently reported the rarity of recognition of spinal fluid changes characteristic of cord compression. Their search of the literature, however, brought to light a number of articles, especially in French and German, dealing with the subject and recognizing certain changes as the "spinal fluid compression syndrome."

The abnormal findings were chiefly three: A yellow color or xanthochromia, spontaneous coagulation, and an increase in the cell count. They tabulate twelve cases which have been under their observation, showing findings, treatment and result, and they review the literature quite extensively. Their conclusions are:

1. We believe that changes in the spinal fluid frequently occur as a result of compression of the spinal cord.

2. The principal characteristic of such compression fluid is marked increase of proteins without corresponding cellular increase, obtained under normal pressure.

3. Xanthochromia with massive coagulation, added to the above, makes a more intense reaction of the same significance, only more conclusive.

4. Factors which tend to give the syndrome most readily, or to give it in its most intense form, are processes which act readily, are intramedullary or cause pressure on the cord from all sides, and which affect the lower cord.

5. We do not believe that such findings are necessary in cord compression, but that their presence is confirmatory evidence of value in some cases.

The following case, which also presented interesting diagnostic problems, is another case confirmatory of these changes in the spinal fluid often characteristic of cord compression, and therefore it seems worthy of special report:

Nov. 20, 1916, J. G., a Pole, aged 23, a drill-press operator, walked into Harper Hospital without noticeable abnormality or impairment of gait, and was admitted as a ward patient. He complained of pain in the abdomen and back, of ten days' duration, which largely disappeared after catheterization had relieved the enormously distended bladder. The family and personal history were negative, save that he asserted that he had suffered twice before from retention of urine, some years before.

The day following admission, there was complete motor paralysis of the left leg, and twenty-four hours later, complete paralysis (flaccid) of the right lower extremity.

The man was well developed; the breath was foul, the tongue coated, the throat injected. He reported that he had lost 20 pounds the last two months. Rigidity of the neck was well marked. There were no abnormalities of extremities or trunk, thorax or abdomen. The patient presented a well marked horizontal nystagmus, most noticeable when he attempted to look down or to the left. His wife, to whom he had been married one year, said that she had long noted this nystagmus. It seemed difficult to correlate it with his present ailment.

November 21, the right knee jerk was exaggerated, and the left still present but of diminished activity. The abdominal reflexes were present, but response was slight, and the cremasterics present. There were no apparent sensory changes, some cervical rigidity, and no Kernig sign.

November 22, the deep reflexes were abolished and there was a complete (flaccid) paralysis of both lower extremities. Sensation was much diminished in both lower extremities, though the cremasterics were still faintly present. These changes went progressively on to the total abolition of all reflexes and an ascending sensory impairment, analgesia being for several days stationary, up to the level of the twelfth dorsal vertebra.

November 21, the spinal fluid was clear, but clotted rapidly.

November 23, the spinal fluid flowed very slowly and clotted instantly, while, November 27, there was spontaneous coagulation, well marked xanthochromia, and no pleocytosis. These changes led to the diagnosis of a compression myelitis and the advice of surgical interference.

December 2, laminectomy was done with free escape of (extradural) pus at the level of the seventh dorsal vertebra, revealing an osteomyelitis of the seventh dorsal vertebra as the source of trouble. The patient died, December 10, and necropsy was refused. The case, however, well illustrates the presence of the Nonne-Froin syndrome in cases of compression myelitis.

1501 David Whitney Building.

1. Ayer, J. B., and Viets, H. R.: Spinal Fluid Findings Characteristic of Cord Compression, THE JOURNAL A. M. A., Dec. 9, 1916, p. 1707.

**English Utilization of Waste Materials.**—Consul A. E. Ingram at Bradford (*Commerce Reports*, April 13, 1917) describes the saving and utilization of waste material in England as recommended by the Local Government Board. The value of bones and fat waste for the production of glycerin for munition purposes is emphasized. It is said the Quartermaster General's Department has in operation a plan for utilizing camp refuse, and some figures are given on the saving on glycerin effected by using wastes. While English-made glycerin was $282 per ton, American glycerin cost $1,182. During the first month, a weekly return to the army of $8,760 for camp refuse was made. In January, 1917, the weekly return had increased to $46,232, representing approximately $2,433,250 annually for waste rations. The production of glycerin from these waste products amounted to more than 1,000 tons, effecting a saving of $875,970.

# Clinical Notes, Suggestions, and New Instruments

## PERNICIOUS MALARIA: A REPORT OF A CASE

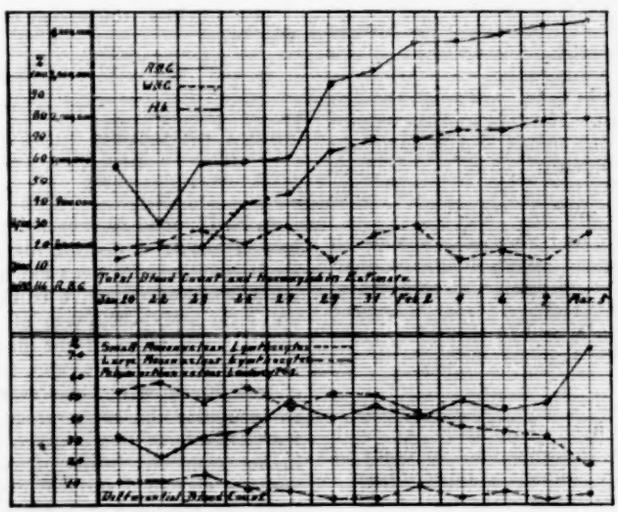
T. Z. CASON, M.D., AND E. G. BIRGE, M.D., JACKSONVILLE, FLA.

This case of pernicious malaria presented several interesting features, particularly the blood picture and the reaction to treatment. Occasionally one obtains a picture of pernicious anemia in these cases, and the absence of parasites in the peripheral circulation throws the diagnosis in doubt unless a complete and careful study of the blood is made during the disease.

Treatment with quinin, properly given, promptly relieves the condition, and the improvement which takes place in the blood picture is surprising.

*History.*—G. W., man, aged 33, white, farmer, was admitted to St. Luke's Hospital, Jacksonville, Fla., Jan. 16, 1917, in a comatose condition. The abdomen was distended and tympanitic. Physical examination at this time was negative. The family and personal history were unimportant. The patient had been taken ill in October, and had had occasional headaches since. There was edema around the eyes and affecting the hands and feet with no pain; it was first noticed, November 18. There was no history of chills. The patient admitted taking much quinin during the past few years. There were marked pyorrhea and marked pallor of the mucous membranes. The lower margin of the spleen was at the costal border; there was slight tenderness to pressure over this area.

*Laboratory Examinations.*—The first slide from this patient was received at the laboratory, January 17, the day after his admission to the hospital. At that time his temperature was subnormal, and there was nothing particularly pathologic in the picture of the blood, and the parasites on examination were absent. We did not receive another slide, January 18, at which time his temperature went up above normal. January 19, we received a slide which gave a picture of pernicious anemia with a high small mononuclear lymphocyte count and a low polymorphonuclear leukocyte count. There were five nucleated red cells of the normoblastic type and one of the megaloblastic type. Poikilocytosis, polycromatophilia and basic stippling were also present.




Total blood counts, hemoglobin estimation and differential blood counts.

January 20, another differential count was made with the same results except that the nucleated red cells were absent and no parasites were found. The red blood cells were 992,000 per cubic millimeter, the white cells 7,500 per cubic millimeter and hemoglobin 15 per cent. January 21, a differential count was made and no parasites found, and it was believed at that time that we were dealing with a case of pernicious anemia rather than pernicious malaria, although the white cell count was too high for a case of primary anemia.

January 22, after a slight rise in his temperature, we found numerous ring bodies and a few megaloblasts, The differential count remained practically the same. On this day the red cells were 865,000 per cubic millimeter, with hemoglobin estimate of 20 per cent. and white cell count of 7,600 per cubic millimeter.

With the diagnosis of malaria established, the man was put on quinin, and from then on his blood picture rapidly became more normal. The accompanying chart shows the improvement in the counts as they were taken every other day. The twenty-second day of the disease, the blood count was: red cells, 3,944,000; while cells, 7,400, and hemoglobin estimate, 15 per cent.

The patient has been kept under observation since with no recurrence. The blood counts, both total and differential, are normal.

## A CASE OF PARAPHARYNGEAL ABSCESS

HARRY S. REYNOLDS, M.D., NEW HAVEN, CONN.

In view of the scarcity of literature on the subject of parapharyngeal abscess, this case seems worth reporting:

Aug. 2, 1916, Dr. T. H. Russell of New Haven invited me to see H. S., a girl, aged 4 years, who had been treated over a period of several weeks by a number of physicians successively. An attack of measles had terminated three weeks previously. As far as we were able to ascertain, a remittent type of fever had begun immediately afterward and had continued since; the patient looked decidedly septic. Both ears had been freely discharging for nine days; the discharge was more profuse from the right ear. One week previously her mother had noticed that she "talked through her nose," as she described it. She had had an irritative unproductive cough for four days. At the time of our visit, 8:30 p. m., her temperature (oral) was 101 F.; the respirations were slow, and the pulse very rapid. Both ears were freely discharging thick offensive pus. There was marked torticollis to the right, the head being moved only with difficulty. There was a large swelling under the right mandible, just below the angle and anterior to the sternocleidomastoid muscle. Both faucial tonsils were rather large, but not reddened, and the right tonsil was displaced markedly inward toward the median line, the posterior pillar being pushed forward. At the right side of the pharynx, immediately behind the posterior pillar of the right tonsil, was a conspicuous swelling—somewhat soft, but not fluctuating. There was no noticeable swelling, edema or redness of the remainder of the pharynx or of the palate, uvula or faucial pillars. The entire posterior portion of the pharynx presented a fairly normal appearance. The heart and lungs were negative.

On the following day, the patient experienced difficulty in swallowing.

August 4, the temperature was 101.2 F. The difficulty in swallowing still persisted, and the left ear had stopped discharging. Mouth breathing was noticeable. The bulging mass in the pharynx just behind the posterior pillar was soft and fluctuating, and had attained the size of a hickory nut. Dr. Russell opened it by inserting a small artery clamp and spreading the points, obtaining a large amount of greenish-yellow pus. Coincident with the internal removal of pus the external swelling decreased markedly in size and the patient seemed considerably relieved.

August 6, the temperature was 99.4 F., the pulse 135, and the patient was very pale and seemed quite weak. There was some cough, although the lungs were negative. The sinus at the right of the pharynx was freely discharging pus; there was still some discharge from the right ear, and the swelling in the neck had almost entirely disappeared.

On the following day, the temperature was 99.2 F. and the patient seemed much improved. The appetite was much better, there was less pallor, the swelling in the neck was negligible, and the discharge from the left ear was thinner and less malodorous.

August 8, the temperature was 101 F., a swelling had appeared in the neck on the left side, and the left ear had again started to discharge. The patient seemed stronger and had a good appetite. The condition of wryneck was now nearly gone and the head was moved freely.

On the following day, the temperature was 98.6 F. The original swelling on the right side of the neck had slightly increased in size and the new swelling on the left had diminished.

August 10, the temperature was 100.4 F.

August 12, the temperature was 98 F., the swelling in the neck had entirely disappeared, the sinus in the pharynx had ceased discharging, and from then on the patient continued to improve steadily.

136 Whalley Avenue.

## PECULIAR SKIN CONDITION OCCURRING IN DIABETES MELLITUS COMPLICATED BY PULMONARY TUBERCULOSIS

JACOB ROSENBLOOM, M.D., Ph.D., PITTSBURGH

I recently observed a peculiar skin condition in a case of diabetes mellitus which presents many points of interest. The patient, a man, aged 54, was told twenty years ago that sugar was present in his urine. He has had none of the classical symptoms of this disease. At present he has a tolerance for 90 gm. of starch. About two months previous to the time he came under my observation, he noticed an eruption on his hands and feet.

The extremities of the fingers and the feet are much swollen, bulbous, hyperemic and bright red. The feet and the fingers tingle and burn. The palms of the hands and soles of the feet are hyperemic. About two months before the eruption broke out, there were neuritic pains in the feet and the hands. The Wassermann and luetin tests are both negative.

A careful search of the literature as regards this vasomotor skin condition with bulbous fingers shows it to be rare. Williamson[1] has found a similar condition in three cases of diabetes. One of these patients suffered from advanced phthisis, another from early phthisis, and in the third, signs of phthisis appeared soon after the bulbous condition of the fingers was noted.

The patient whom I have studied also has an advanced pulmonary tuberculosis of the left apex of the lung. It would seem that this peculiar condition is found only in cases of diabetes mellitus complicated with pulmonary tuberculosis.

5737 Forbes Street.

## A CORNEAL ULCER PRODUCED BY VARICELLA

JESSE S. WYLER, M.D., CINCINNATI

The end-result in this case was serious, for so common and mild a disease as varicella, and I have been able to find only one report of a similar condition.

March 10, 1916, I was called to see a girl, aged 5 years, who had been confined to the house for four days with a rather mild case of varicella. The child was well nourished, and the hygienic surroundings were all that could be desired. The mother related that on the second day of the eruption the child became unable to open the right eye, and tears from this eye constantly flowed over the cheek.

The child had a few scattered crusts over the face and chest, no abnormal temperature, and felt well excepting for the eye, which was kept closed. The upper lid was slightly swollen and the tarsal and bulbar conjunctivae faintly reddened with a ciliary congestion at the limbus. In the center of the cornea was a punched out area perfectly round, which measured about 2 mm. in diameter. The edges were sharply marked and the base of the ulcer was deep and grayish. Staining with methylene blue and fluorescein gave a beautiful demonstration of a blue center with a greenish border. The iris was faintly greenish but reacted slowly. The rest of the cornea was clear. Atropin, 1 per cent., powdered dionin and yellow mercuric oxid, 5 per cent., were used and a bandage applied daily. The ulcer showed no tendency to spread, slowly healed, and in about two weeks was completely covered with epithelium, with a remaining facet which gradually filled out to the level of the cornea. Applications of fibrolysin, and strong ointment of yellow mercuric oxid up to 20 per cent. were used to clear up the opacity and, September 7, the vision of the right eye which, before the attack, had been normal, was 6/36. The macula is thinning slightly. I believe that this ulcer was the eruption of a pock on the cornea, for: 1. It appeared simultaneously with the skin lesions. 2. It was too large for an ordinary phlyctena and there were no other signs of eczematous conditions generally or locally. 3. The healing was much slower than in ordinary keratitis.

Only one other corneal involvement following chickenpox has been described. The case, reported by Terson,[1] is strikingly similar to mine. The patient was a girl aged 18, who had a benign attack of varicella. On the second day a corneal lesion appeared, which persisted. Several days later examination showed a grayish ulceration exactly in the center of the cornea without hypopyon or iritis. It was the size of a pea and quite round. Healing was rapid under xeroform ointment. The round form of the ulcer and absence of all other causes made Terson ascribe the condition to a ruptured vesicle due to varicella. He also makes mention of a second case of chickenpox with optic neuritis as a complication, and quotes the patient of Fuchs who had cyclitis.

Jan. 10, 1917, the vision of the affected eye of my patient was 6/24.

Seventh and Race Streets.

## EDEMA OF MOUTH, PHARYNX, TONGUE AND EPIGLOTTIS DUE TO EATING BRAZIL NUT

VIRGINIUS DABNEY, M.D., WASHINGTON, D.C.

A. N. D., aged 29, married, mother of three healthy children, had in infancy a definite history of what we now know to be an anaphylaxis for eggs and milk. She had been a bottle-fed baby, and had digestive trouble continuously from childhood up to the twenty-fifth year of age. She had noticed frequently that even a trace of the flavoring of Brazil nut made her mouth sore and her tongue feel swollen. On this occasion a chocolate-coated nut was swallowed before she had had time to recognize the taste which experience had taught her to fear. Inside of five minutes she felt a burning, intense pain in her stomach; beads of sweat appeared on her forehead, and she was in a state of great prostration. A few minutes later her tongue had become scarlet and so much enlarged that she could not close her teeth together by an inch. The edema of the whole oropharynx was marked, and the uvula was so elongated as to reach almost to the base of the tongue. Both the lingual and laryngeal surfaces of the epiglottis were similarly infiltrated, and swallowing anything caused excruciating pain and was practically impossible. Heat was applied to the epigastrium and one-fourth grain of morphin given hypodermically, with immediate relief of the pain. In twelve hours all symptoms had disappeared. She said that a mere trace of mustard as a salad ingredient had several times before done the same thing to her tongue, though never had the gastric pain been so severe. There was no evidence of any neurosis, as she was not aware of the presence of mustard when these attacks had occurred. It is interesting to note that her eldest child had acidosis once, but now has outgrown this tendency, though he still has a mild anaphylaxis for eggs, and his digestion is not proof against any indiscretion in diet.

1633 Connecticut Avenue.

1. Williamson: Diabetes Mellitus and Its Treatment, 1898, p. 227.

1. Terson: Clin. opht., June 1, 1914.

**Heated Houses and Colds.**—During the winter time the air in heated houses, schools and offices is apt to be of desert dryness. The common head cold and the prevalence of catarrhal conditions of the nose and throat are due to this indoor dryness to a greater degree than to the outdoor cold and storms.—Asst. Surg.-Gen. J. W. Trask, *Public Health Reports.*

# Therapeutics

## DISTURBANCES OF THE KIDNEYS

(Continued from page 1406)

### MOVABLE KIDNEY

A loosened kidney, generally without manifesting symptoms, may be found in about 20 per cent. of all women over 20. It is of infrequent occurrence in colored women, according to Griffith.[117] The right kidney is the one more frequently prolapsed. Griffith believes this kidney is found movable three times as frequently as the left. Occasionally both kidneys are prolapsed. Tumors of the kidney, or in the tissues above or around it, are perhaps accidental factors in causing a kidney to prolapse. Constipation is probably never a cause. Sudden loss of weight, that is, loss of abdominal fat, is perhaps a frequent factor, but it is usually associated with a predisposition to kidney displacement.

Griffith believes that a contracted lower part of the chest in women is an important predisposing cause, as such an anatomic condition makes the fossa that holds the kidney and suprarenal capsules shallow, and predisposes toward prolapse of the kidney. In men these fossae are generally deeper.

The kidneys are normally slightly movable, and the right kidney is lower than the left. When the fat, which is such an important factor in supporting the kidneys, is lost and one or both kidneys become abnormally movable, the slightest added strain will seriously displace one or both kidneys. When the corset is loose below and tight above, or when it is entirely removed and excessive dancing indulged in, as is now in vogue, loosened kidneys probably occur more frequently.

Werelius[118] quotes Glénard's classification of the degrees of prolapse of the kidney. In the first degree the upper end of a kidney is found at the costal margin; in the second degree the whole kidney is below the costal cartilages, and in the third degree the kidney is found anywhere in the abdomen at a distance from the costal cartilages.

The prolapsed kidney may be of any size, but it is often enlarged, and may become hydronephrotic. Various anatomic and histologic disturbances may be found in these kidneys, which are subjected to great variability in their blood supply, in their nutrition, and in the pressure of the urine in the kidney pelvis.

Secondary abdominal conditions caused by pressure from a floating kidney may occur, or there may be no symptoms, even though the kidney is very movable. Constipation is often a symptom, perhaps because of pressure on the colon or cecum.

Not infrequently chronic appendicitis is an accompaniment of a floating right kidney, and even ovarian pain and bladder irritability may follow. Gallbladder disturbances are sometimes associated with displaced right kidney. Whether these conditions are caused by direct pressure, by reflex disturbances, or by interference with the normal circulation of these parts is a question to be decided in each individual case. Both gastric and intestinal indigestion often occur in patients who have a displaced kidney, and there is frequently distress at night, and inability to lie on the side or on the back, without aches and pains. In many instances the displaced kidney is associated with ptosis of the stomach and intestine. Various neurasthenic and hysterical symptoms may occur in these patients, and if the loose kidney is not diagnosed, the patient may be treated at home or in sanatoriums for nervous dyspepsia, nervous indigestion, or similar complaints, with no permanent benefit.

It must be emphasized, however, that frequently floating and loose kidneys cause no symptoms whatever. When, during a physical examination, a displaced kidney is discovered, information of such a condition should, as a rule, be withheld from the patient.

Real pain, and many kinds of referred abdominal pain — even the intense pain termed Dietl's crisis — may be caused by a loose kidney. Dietl's crisis is really a kidney colic due to twisting of the ureter and distention of the pelvis of the kidney. Whether or not the obstruction is severe enough to cause one of these typical crises, the variations in the amount of urine retained in the pelvis of the kidney frequently cause the kidney to become enlarged. Hence many times scientific examinations alone can determine whether a kidney tumor has caused a movable, enlarged kidney or whether the kidney contains a stone with subsequent enlargement.

Other movable tumors may also be found in an abdomen, but the kidney shape is typical, and a loosened kidney is more movable than other abdominal tumors. Stone in the kidney and kidney tumors are apt to cause hematuria; hydronephrosis caused by the mobility of a kidney is generally intermittent; at one time a large tumor is found, at another time the kidney may even be difficult to locate.

It should be emphasized that while a single positive finding of a loosened kidney is diagnostic, repeated abdominal examinations may not reveal a loosened kidney, though a later examination may show that one is even floating. The elusiveness of such a kidney is probably caused by varying gas pressure in the intestine.

A movable kidney that is causing symptoms may be kept in place by a properly made and properly fitting corset, or by a so-called kidney belt. Rest and an increase in such a diet as will cause the patient to gain weight may cause such a kidney, if not actually floating, to become more or less permanently fixed. Such simple treatment as an abdominal belt sometimes causes entire abeyance of all disagreeable abdominal symptoms, and the patient is symptomatically cured. At times it is difficult to determine how many of the abdominal disturbances and functional disturbances are due to the displaced kidney, but strapping of the abdomen will generally show what value an abdominal belt or corset will produce. Hence, before an expensive apparatus is ordered, strapping should be tried, as the abdominal condition may not be caused by the loose kidney, which may be the source of no symptoms whatever.

The general trend of surgical opinion is that the importance of a loosened kidney in causing symptoms has been overestimated, that many patients are not improved by an operation to fasten the kidney to its normal position, and that many such plastic operations are unsuccessful, as the kidney again becomes loose. On the other hand, while a loose kidney does not necessarily need medical or surgical attention, there are many instances in which a belt does not ameliorate

117. Griffith: Johns Hopkins Hosp. Bull., March, 1910, p. 75.
118. Werelius, Axel: Nephroptosis and Nephropexy, THE JOURNAL A. M. A., March 1, 1913, p. 643.

the symptoms, and in which an operation for fastening the kidney into its normal position will cause permanent disappearance of all associated abdominal disturbances. Therefore, the least that can be said is that occasionally such a plastic operation is necessary and is curative.

*(To be continued)*

## Special Article

# THE MEDICAL OFFICER OF THE ARMY

## V

### MILITARY PROPERTY—MILITARY LAW

The issue and care of military property and supplies is a subject that requires considerable attention from the new medical officer, though the accounting for this property is simple, and can be readily understood.

The supply table in the "Manual for the Medical Department" contains a complete list of all supplies that are considered necessary in the military service; but in time of peace any special instrument, apparatus or pharmaceutic preparation that is considered necessary is promptly supplied on requisition. That part of the supply table which refers to the field supplies is not so flexible. It must be understood that when an army is in campaign all supplies have to be standardized so that the supply depots can have on hand a sufficient reserve to meet all emergencies. If special articles not in this table are called for, the time required to fill such a requisition will naturally be much longer, and if dependence is placed on special orders of this kind, the sick and wounded are bound to suffer. Furthermore, these supplies are arranged in such a manner that space in packing is economized as far as possible. This is important, for the transportation facilities of an army are always kept down to the smallest amount.

#### REQUISITIONS

In the field, requisition for medical supplies is made whenever these supplies are needed. No specific date for forwarding these requisitions is given. All requisitions of this type are made on a special requisition blank, which is simply a sheet arranged for the convenience of the officer requiring the supplies. It of course includes a heading, and following that is the list of supplies needed, typewritten in alphabetical order as they appear on the field supply table. When new units are organized, the medical department equipment is also furnished on the same type of requisition. This requisition is forwarded to the division surgeon or the department surgeon, and on his approval the stores are issued.

In time of peace, annual requisitions are made for the supplies that will be needed during the coming year. The amount of these supplies is laid down in the supply table and depends on the strength of the garrison. Naturally, though, special articles are needed at times, and furthermore, on account of different contingencies, the annual allowance is found at times insufficient. To remedy this a special requisition can be made when necessary, though it is recommended always that these requisitions be put in not oftener than once a quarter.

#### THE CHECKING OF PROPERTY

When medical supplies are shipped to an organization, an invoice is sent to the officer who has made a requisition for them. On receipt of the supplies he checks them over carefully according to the invoice and signs the two copies of the receipt which accompany the invoice. One of these copies is sent to the issuing officer, and the other to the surgeon general at Washington, D. C. The checking of this property when received is facilitated by a packer's list which is sent with it and gives the numbers and contents of the separate packages.

A careful record of property received and expended is kept in the office of the organization. This is called a property return. The return is merely a simple method of bookkeeping with the debits and credits plainly shown, so that at any time it can be determined just exactly what quantity of any article is on hand.

Medical department property is divided into two classes — expendable and nonexpendable. In the supply table the nonexpendable articles are shown in italics, and these articles cannot be destroyed or otherwise expended without authority. The expendable articles can be used in the treatment of the sick and wounded, and can be dropped from the return by the accountable officer without further procedure.

When the officer in charge of any amount of medical department property has been relieved by another officer, his property return is closed; that is, the quantity on hand is balanced by article and the relieving officer receipts to him for what remains on hand by signing the receipt inclosed with the return. All officers are cautioned carefully to check up property shipped to them or turned over to them by their predecessors, as they will be responsible for any discrepancies not noted.

All officers who have property invoiced to them, and who keep a property return, are considered *accountable* for this property; that is, the returns required are always completed under their supervision. On the other hand, if property is issued to them as in charge of any part of a hospital or other sanitary unit for which they give a memorandum receipt, they are *responsible* for the property and are required to care for it adequately, but they do not make a "property return" for it.

If property has become unserviceable for any cause, or is lost in the service, a survey report is made of this property, giving the articles to be considered, accompanied by the necessary affidavits of enlisted men and the certificates of officers that every care has been taken to preserve the articles mentioned. This is then considered by an officer detailed by the commanding officer as a survey officer, who determines from his investigation whether due care was taken in the premises, and besides, whether or not the officer responsible should be cleared of responsibility or should be required to pay the cost of the property.

In addition to this method of disposing of unserviceable property, it can be placed before an inspector whenever he visits the command for inspection purposes. He would then inspect the property and decide what disposition should be made of it, and his decision is usually final. If the property is ordered destroyed by either of these methods, the report of the inspecting officer, with his decision in the separate instances, is forwarded as a voucher with the return,

when made, to show the disposition of the articles destroyed or otherwise disposed of.

### MILITARY LAW

Military law is provided for the government of armies in peace and war. There are two divisions of military law: One is called international law and treats particularly of the action of armies and individuals of those armies in time of war, or at any time when they come in contact with foreign nations. That part of international law which is of interest to our armies in time of war is laid down in a small book published by the War Department called "The Rules of Land Warfare," and can be obtained by application to the adjutant general, Washington, D. C. These rules are of decided interest to the medical officer, for his actions when captured by the enemy, or in other contingencies, are laid down carefully and must be obeyed to the letter.

The other division of military law is for the internal government of the army and is covered by the "Articles of War," which form the common law for the army. Offenses are classified and punishments provided in the same way that the civil law is written.

### COURTS MARTIAL

To punish violations of military law, courts martial are provided. These are of three classes: the summary court, the special court and the general court.

The summary court is the lowest military court and consists of one officer appointed by the commanding officer of the organization. This court has jurisdiction over minor offenses committed by enlisted men, though a noncommissioned officer and several classes of enlisted men, especially excepted by the president, cannot be tried by such a court without their consent. This court is also limited in its power of punishment and cannot sentence a man to a longer confinement than three months, or a forfeiture of more than three months' pay.

The special court consists of from three to five officers appointed by the commanding officer of the organization. This court can try any person subject to military law except officers or classes especially excepted by the president. This court has jurisdiction over offenses of considerable more gravity than those covered by the authority of the summary court, but it cannot sentence a man to dishonorable discharge, to confinement for a longer period than six months, or forfeiture of more than six months' pay.

The general court is the highest military court, and consists of from five to thirteen officers. If the latter number is available, it must be so constituted. The general court is convened by commanding officers of the larger units of the army, as the division, or separate brigade, or by commanding officers of territorial departments. This court has jurisdiction over offenses committed by any person subject to military law, and the limits of punishment are as shown in the "Articles of War" covering the offenses. The death punishment cannot be imposed except when specifically authorized by law.

To make the action of a court martial final, the proceedings must be approved by the officer who convenes the court, or, if he has been relieved, by his successor. Sentences for the dismissal of an officer tried within the limits of the United States must be approved by the president.

The general court martial sits in full uniform, with side arms, around a table provided for the purpose, the president of the court taking his seat at the head of the table; the other officers on either side according to rank. The judge advocate of the court, who is in reality the prosecuting attorney, takes his seat at the foot of the table. He swears all witnesses and conducts the proceedings of the court. Each person to be tried is allowed counsel, who may be an officer detailed for the purpose, or, if he so elects, a civilian lawyer. The trial is conducted according to the regular rules of evidence, and all points of evidence are carefully considered before a finding is made.

### OTHER COURTS AND BOARDS

In addition to these courts as outlined in the foregoing, we have a court of inquiry provided for in law, which is convened at the request of any officer or soldier who considers that he has been wrongly treated. It consists of three or more officers, carefully considers the evidence in the case, and renders an opinion when ordered to do so.

Retiring boards are also formed to examine officers who desire retirement from the service, or who have been ordered to appear before them for examination in view of their retirement. These boards consist of five members, of whom two are medical officers. They see that the officer is carefully examined, and consider the evidence presented to them by the War Department or by the officer concerned, and decide from this examination and evidence as to whether, in their opinion, the officer should be placed on the retired list of the army. Their findings must receive the approval of the War Department before the action is considered final.

All officers serving on courts martial, boards of inquiry or retiring boards, are sworn before they enter into their specific duties, so that they are under oath to well and truly try the cases brought before them.

The punishment for infractions of the military law are laid down in the "Manual of Courts Martial," and in a great many cases convictions for special crimes or misdemeanors call for a certain punishment, which is mandatory.

The "Articles of War" in offenses such as a sentry sleeping on post, desertion, violation of safe conduct, etc., give two grades of punishment — one for peace time, which is outlined from time to time by proclamation of the president, and another for war time, which, for the offenses mentioned, is always death. In time of peace, certain military offenses are treated distinctly from the reformatory standpoint, and the man is given a chance to mend his ways and become a good soldier. This reformatory work is conducted at the military prison at Fort Leavenworth and its branches at Governors Island, New York, and Alcatraz Island, San Francisco. Each prisoner is carefully examined by an alienist when he is sent to these institutions, and his treatment is to a certain extent along lines suggested by this examination. If he is considered capable of reform, and his efforts in that line are satisfactory, he is placed in a disciplinary battalion for further training, and if he shows a proper degree of improvement he may be returned to the army to serve again as a soldier.

*(To be continued)*

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**Communicability of Cancer.**—A study of life insurance statistics, recently completed by Arthur Hunter, president of the Actuarial Society of America, indicates that the cancer rate among those in attendance on sufferers from cancer is only normal, and that the same is true among those whose parents or grandparents died with cancer.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 19, 1917

**THE SELECTIVE DRAFT HAS PASSED. FIVE HUNDRED THOUSAND SOLDIERS WILL SOON BE IN TRAINING. FOR THESE MEN 3,500 PHYSICIANS ARE NECESSARY. WILL YOU BE ONE? IF YOU HAVE NOT ALREADY APPLIED FOR MEMBERSHIP IN THE MEDICAL RESERVE CORPS, DO IT NOW. WE WILL SEND YOU AN APPLICATION BLANK.**

## DIET AND THE BACTERIAL FLORA OF THE INTESTINE

It is becoming an accepted dictum that the most important factor in determining the character of the bacterial flora of the intestine is diet. Ingestion of foreign bacteria, even in large numbers, does not of itself seem to displace the common intestinal types in normal individuals.[1] This fact needs to be kept in mind in any attempt to implant a special strain of bacteria for therapeutic purposes in the digestive tract. Interest has been concentrated from time to time on several groups of micro-organisms which may appear in special relations to the alimentary processes. They include the so-called "putrefactive" bacteria, of which the *Bacillus coli* and *B. welchii* are familiar illustrations; the aciduric micro-organisms represented by *B. acidophilus, B. bifidus,* and also the widely heralded *B. bulgaricus;* and latterly the amylolytic or starch-decomposing bacteria, of which the *Glycobacter peptolyticus* of Metchnikoff is an example. Each group represents organisms which somewhat specifically exhibit a pronounced disintegrative effect on individual types of food compounds — proteins, sugars and starches, in the order referred to above.

Long ago Herter and Kendall[1] found that in animals an abrupt change in diet from a dominantly protein (meat and eggs) to a milk and sugar diet is followed by an alteration of physiologic conditions in three distinct directions: in the nature of the intestinal flora, in the putrefactive products of the feces and urine, and in the clinical conditions. The chief characteristic of the bacterial change is the gradual but rapid substitution of an acidophilic nonproteolyzing type of flora for a strongly proteolyzing type. The chief feature of the putrefactive conditions in the intestine is the reduction of the indol, skatol, phenol and bound hydrogen sulphid and a diminution in the indican and aromatic oxyacids of the urine. Clinically the most striking feature of the change in diet is (in monkeys) an improvement in spirits and activity which may safely be construed as showing a markedly improved sense of bodily and psychic well being. The diminished intestinal putrefaction may in part be ascribed to a reduced protein intake when meat and eggs are omitted from the dietary, but this alone was not believed to account for the pronounced physiologic changes, particularly the alteration in the flora. After noting the extensive bacterial degeneration which follows the change from one diet to another, Herter and Kendall ventured to assert that possibly in conditions of disease of the intestinal tract in which undesirable bacteria abound both on a protein diet and on a diet rich in carbohydrates, frequent alternations in the chemical nature of the diet are beneficial by interfering with the establishment of any one type of bacteria in the intestine.

Meanwhile the work of Rettger and his pupils,[2] among others, has afforded a substantiation of these views. They have shown that the *B. acidophilus* of Moro and the *B. bifidus* of Tissier, two well known members of the aciduric or lactic acid bacillus group of bacteria, are common inhabitants of the intestinal tract even of man. At times their numbers may be so small that they almost escape detection, whereas at other times they may become established to the exclusion of other forms. The typical flora of infants which subsist on mother's milk is cited as an illustration of the extent to which one intestinal organism (*B. bifidus*) may dominate and even supplant all other types.

Hull and Rettger of Yale University have shown that milk undoubtedly owes its beneficial action to the lactose which constitutes nearly half of its solid matter. When lactose is taken in liberal amounts by human adults, along with the daily food, the flora characteristic of healthy persons on a mixed diet begins to change until *B. acidophilus* appears in conspicuous or even dominant numbers. *B. bifidus* is always less prominent. Without the ingestion of lactose, no such changes are observed. Following the use of laxatives, these organisms are present in much larger numbers. This is ascribed by Hull and Rettger to the transfer of lactose along the alimentary canal so that before absorption a sufficient amount reaches the lower parts

1. An Observation on the Fate of B. Bulgaricus (in Bacillac) in the Digestive Tract of a Monkey, Jour. Biol. Chem., 1908, **5**, 293; The Influence of Dietary Alternations on the Types of Intestinal Flora, ibid., 1910, **7**, 203.

2. Rettger, L. F., and Horton, G. D.: A Comparative Study of the Intestinal Flora of White Rats Kept on Experimental and Ordinary Mixed Diet, Centralbl. f. Bakteriol., Part I, orig. **73**, 362. Hull, T. G., and Rettger, L. F.: The Influence of Milk and Carbohydrate Feeding on the Intestinal Flora of White Rats, ibid., **75**, 219. Rettger, L. F.: The Influence of Milk Feeding on Mortality and Growth and on the Character of the Intestinal Flora, Jour. Exper. Med., 1915, **21**, 365. Hull, T. G., and Rettger, L. F.: The Influence of Milk and Carbohydrate Feeding on the Character of the Intestinal Flora, Jour. Bacteriol., 1917, **2**, 47.

of the intestine, where the aciduric bacteria are known to multiply most abundantly under the right conditions of nutriment and environment. Obviously unless the sugar can be transported to the place where the most marked bacterial changes, putrefactive and otherwise, occur, little opportunity is afforded for the development of the aciduric type of micro-organism. It seems likely that lactose disappears somewhat slowly from the intestine. Bread, on the other hand, containing cooked starch is quickly digested so that available sugar does not remain long enough in the intestine to exert the favorable effect on the bacteria. Milk and lactose together are said to form the most practical and effective diet to bring about the predominance of the aciduric bacteria in man. Meat and other protein-rich foods increase the incidence of indol-producing forms.

These experiences are in accord with the reported effects of the use of lactose and milk in the dietary of typhoid fever.[3] Here, too, milk alone has not been found as efficient as a diet with additions of carbohydrate, particularly lactose, in reducing the putrefying types of bacteria and encouraging the acidophilic forms. Finally it should be noted that the Yale investigators, like numerous other observers, have been unable to establish *B. bulgaricus* in the intestine by the feeding of large numbers of these organisms. The ingestion of milk may bring about a change in the aciduric type of intestinal flora; the dominating organism, however, is not the bacillus of Massol but the *B. acidophilus* of Moro.

## THE EFFECT OF SODIUM CARBONATE IN DIABETES

The mechanism for the oxidation of sugar in the body is extremely sensitive to the concentration of hydrogen ions. What would once have been regarded as seemingly insignificant alterations in the reaction of tissue fluids have been demonstrated to modify detectably the consumption of sugar by the isolated beating heart or the surviving intestine.[4] Such physiologic indicators are far more significant than a strip of litmus paper, because they respond promptly and vigorously to minute alterations in their physiologic environment. The greatest difficulty in drawing conclusions from observations on surviving organs in this way lies in the multitude of possible factors which may contribute to the deviations of performance made by a delicately responsive mechanism. That is, there are many physiologic and pathologic variables which may modify cellular functions.

The possible biologic significance of what seem like mere traces of acid or alkali — slight alterations in the reaction of the environment of the tissue cells — may perhaps be appreciated more easily in the light of a recent calculation by Lusk.[5] The least amount of energy which is necessary to maintain the life processes of 1 kg. of body substance is 1 calory an hour, which represents the quantity of energy contained in 215 mg. of glucose. In ordinary life, two thirds of the energy which supports our bodies is derived from glucose. It has been estimated that 1 kg. of body tissue contains cells having a total surface area of 150 square meters. Therefore, when each square meter of this cell surface is supplied with a sugar solution containing 1.5 mg. of glucose an hour, the life of the tissue can be maintained. One can thus imagine, says Lusk, how thin a film of glucose solution around the cell is necessary for the maintenance of its life. Here slight alterations of reaction may well be conceived to exert profound effects.

This concerns also the relations of acids and alkalies to diabetes, recently discussed in THE JOURNAL.[6] Murlin and Sweet[7] have suggested that the internal function of the pancreas may be closely akin to its external function in that, on the one hand (external), it provides for the complete neutralization of the acid contents of the stomach, thereby protecting the liver in its glycogenic function, and on the other (internal), it somehow preserves the proper concentration of hydrogen ions in the tissues for combustion of glucose. It is not impossible that the pancreatic hormone, through which the latter function is discharged, may prove to be a peculiarly adapted alkali produced by the islands of Langerhans. A differentiation of cells for the production of alkali in the pancreas is *a priori* no more improbable than such a differentiation for the production of acid in the stomach. The alkali which passes into the intestine neutralizes the hydrochloric acid of the stomach, but it may also be given off to the blood. Acidity of the tissues may be due to the accumulation of carbon dioxid. A peculiarly adapted alkali which should maintain the combining power of the blood (corpuscles as well as plasma) for carbon dioxid would serve to maintain the normal reaction in the tissues. Not only would the apparently remedial effect of gastrectomy on experimental pancreatic diabetes thus be explained, but also the possible benefit of alkali therapy in human diabetes appears in a new light. In this connection Underhill[8] has reported the apparently beneficial effect of large doses of alkali in severe glycosuria in man; and more recently Murlin and Craver[9] have begun a series of

3. Barker, L. F.: The Diet in Typhoid Fever, THE JOURNAL A. M. A., Sept. 12, 1914, p. 929. Torrey, J. C.: The Fecal Flora of Typhoid Fever and Its Reaction to Various Diets, Jour. Infect. Dis., 1915, **16**, 72.

4. Compare Rona, P., and Wilenko, G. G.: Biochem. Ztschr., 1914, **59**, 173. Rona, P., and Neukirch, P.: Arch. f. d. ges. Physiol., 1912, **145**, 271.

5. Lusk, Graham: Intermediary Metabolism in Diabetes, Am. Jour. Med. Sc., 1917, **153**, 40.

6. Acids and Alkalies in Relation to Diabetes, editorial, May 12, 1917, p. 1411.

7. Murlin, J. R., and Sweet, J. E.: Pancreatic Diabetes in the Dog, IV, The Influence of Pylorus Exclusion and of Gastrectomy upon the Effects of Pancreatectomy, Jour. Biol. Chem., 1916, **28**, 261.

8. Underhill, F. P.: Proc. Soc. Exper. Biol. and Med., 1916, **13**, 111.

9. Murlin, J. R., and Craver, L. F.: Preliminary Observations on the Influence of Sodium Carbonate, Administered by Duodenal Tube, upon Human Diabetes, Jour. Biol. Chem., 1916, **28**, 289.

observations on the influence of sodium carbonate, administered by duodenal tube, in human diabetes.

It must be pointed out at the outset that the hydrogen ion contents of the blood, and still more of the tissues, cannot be altered easily; but as slight changes seem to produce marked effects, on isolated organs at least, the more careful attempts to influence tissue reaction seem worth while. The reasons for the duodenal mode of administering alkali were twofold: It was expected thereby to find little danger of vomiting and no interference with digestion, and it was believed that in the duodenum the alkali would not stimulate the stomach to produce more acid. The outcome in the few cases already studied is highly suggestive. The observations of the favorable effects of alkali on depancreatized dogs were confirmed. The output of sugar was often materially reduced. There was distinct clinical improvement in several of the patients. Murlin and Craver are convinced that there may be a bona fide reduction in the percentage of blood sugar by the alkali independently of any factor of dilution. If this is true, they add, there is little reason to doubt that, in man as in the dog, the alkali may facilitate the actual oxidation of glucose. Only direct observations on the respiratory metabolism can settle this question.

## SPIROCHETES AND RAT-BITE FEVER

Since our previous reviews of the cause of rat-bite fever,[1] new facts, experimental and clinical, have turned more light on the questions still at issue. Futaki, Takaki, Taniguchi and Osumi have fortified their contention of the protozoan etiology of the disease by a study of five more cases, in each of which they found a spirochete,[2] two patients exhibiting the spirochete in the circulating blood derived from a vein or the punctured skin. In the early stages of rat-bite fever the spirochetes are found in the local eruption of the skin and in the enlarged lymph nodes, whence they seem gradually to invade the blood. In relapsing fever the organisms are numerous during the febrile, but decrease greatly in number or disappear altogether during the afebrile period. When animals are inoculated with blood from a patient suffering from rat-bite fever during the afebrile period or when there is light fever, the spirochetes are present. It is always difficult to find them, however, as they are few in number.

The Japanese investigators believe that the spirochete identified by them belongs to the protozoa and not to the bacteria. Spirochetes, of course, occur in rats; but as those under consideration in the human disease appear to be without identification as known species, the new designation of *Spirochaeta morsus-muris* is now proposed for the etiologic organism, which is regarded as belonging to the *Spironemacea* (Gross) of the nature of *Treponema*.

This raises definitely the debated question as to whether or not rat-bite fever is caused by a streptothrix, as maintained by several, including American observers[3] of the disease, or by the newly described spirochete. Perhaps it ought rather to be said that rat-bite fever with the clinical symptoms of inflammation of the bitten part, paroxysms of fever of the relapsing type, swelling of the lymph glands, and eruption of the skin, all occurring after an incubation period usually of from ten to twenty-two days or longer, does not necessarily include all diseases related to the bites of rats. Indeed, the Japanese workers regard Blake's carefully studied case as one of streptothrix sepsis caused by the bite of a rat.

There are so few spirochetes in the swollen local lesions of the skin and the enlarged lymph glands that it is said to be unusually difficult to detect them in material taken from patients. For this reason inoculations, preferably into mice, are advised. The organism can then be found in the blood of the inoculated animal after a lapse of from five to fourteen days, or at the latest four weeks. In harmony with the spirochetal theory is the striking clinical effect of salvarsan on rat-bite fever.[4] The micro-organism is also decidedly arsenotropic in the experimental therapy of inoculated animals.

The spirochete described is not present in the blood of all rats, and there is no relation between the species of the rat and the ratio of infection. The organism has never been found in healthy mice or guinea-pigs; but the latter animals develop the disease after they are bitten by rats infected with the spirochete. It can be detected in about 3 per cent. of house rats in Japan. From the fact that patients suffering from rat-bite fever have invariably been bitten by rats and that the newly named spirochetes are found both in house rats and in human patients with rat-bite fever, the Japanese investigators logically infer that the spirochete is transmitted from the rat to the human body. As the organisms have never been detected in the saliva, but only in the blood of rats, the source of the infectious organism is believed to be in blood which, owing to hemorrhage from the gums, enters the saliva of the rat.

1. The Cause of Rat-Bite Fever, editorial, The Journal A. M. A., Oct. 9, 1915, p. 1285; Further Observations on the Cause of Rat-Bite Fever, March 18, 1916, p. 894.

2. The Cause of Rat-Bite Fever, Jour. Exper. Med., 1916, **23**, 249; Spirochaeta Morsus Muris, N. Sp., the Cause of Rat-Bite Fever, Second Paper, ibid., 1917, **25**, 33.

3. For example, F. G. Blake (Jour. Exper. Med., 1916, **23**, 39), Wilder Tileston (The Journal A. M. A., April 1, 1916, p. 995), and Ruth Tunnicliff (The Journal A. M. A., May 20, 1916, p. 1606).

4. Hata, S.: München. med. Wchnschr., 1912, **59**, 854.

**The Price of Knowledge.**—Thoughtless people often grumble at the two or three guineas paid for a few words of advice. They do not reflect how long it has taken the physician to acquire the knowledge that enables him to give profitable counsel, or that the advice, if faithfully followed, may mean prolongation of life and increased efficiency in work, to say nothing of greater happiness for the patient himself and his family. The public has still to be educated to a right appreciation of the intellectual value of things and to deliverance from the superstition of a crude commercialism as the ruling principle of life.—*Brit. Med. Jour.*, Jan. 27, 1917.

# Current Comment

**THE SELECTIVE DRAFT HAS PASSED. FIVE HUNDRED THOUSAND SOLDIERS WILL SOON BE IN TRAINING. FOR THESE MEN 3,500 PHYSICIANS ARE NECESSARY. WILL YOU BE ONE? IF YOU HAVE NOT ALREADY APPLIED FOR MEMBERSHIP IN THE MEDICAL RESERVE CORPS, DO IT NOW. WE WILL SEND YOU AN APPLICATION BLANK.**

## WAR AND PROHIBITION

The prohibition movement appears to be growing steadily stronger and stronger. At present about 85 per cent. of the territory of the United States is dry, and about 58 per cent. of the population. In view of the increasing strength of the sentiment in favor of prohibition, it is not at all surprising that a powerful effort should be made to secure some form of nation-wide prohibition at least during the war. Besides the usual reasons urged in favor of prohibition, special emphasis is now directed to the necessity of stopping the manufacture of alcoholic beverages in order to conserve the food supply and to turn additional labor into channels concerning the usefulness and necessity of which there can be no question. But of all reasons that may be urged against the use of alcoholic drinks, the two that must appeal to physicians with irresistible force are (1) the action of alcohol in lessening all forms of efficiency, physical, intellectual and moral, and (2) the intimate connection always found between drinking, prostitution and the spread of venereal diseases. The evidence against alcohol on these accounts is so overwhelming, so well established, and so generally known, that it does not seem necessary at this time to go into details, quote figures or cite examples. Only the other day an experiment was mentioned in THE JOURNAL (p. 1414) which showed that 50 gm. of brandy causes a depreciation in the marksmanship of expert shots of 30 per cent. in rapid firing and 50 per cent. in slow firing. What sense is there in training men to become efficient and then sit idly by and let the hard-won efficiency be taken away by alcohol? We know that wars heretofore have resulted in tremendous increase in venereal diseases, not only in the military but also in the civil population. Students of history tell us that such increase may be sufficient to place the stamp of physical deterioration on entire nations. To ask another question — what sense is there in laboriously selecting and training the flower of our young manhood to make soldiers, sailors, marines, and then do nothing decisive to save them from the far-reaching disasters to themselves and others of venereal disease? The fate of the movement to secure nation-wide war prohibition through legislative action and in other ways is uncertain. As the first duty of the medical profession is to prevent disease and loss of human efficiency, we must do all in our power to favor such movements. In the meanwhile no time should be lost in putting into effect the excellent recommendations of the General Medical Board to the Council of National Defense that every military command be surrounded by a protected zone in which prohibition and the sale of alcoholic drinks shall be prohibited, and that special efforts be directed toward furnishing the men with suitable opportunities for wholesome recreation.

## MEDICAL OFFICERS' TRAINING

The medical officer in the army is not only a physician but also a soldier — at least he is a soldier in that he is an integral part of a machine, all parts of which must run smoothly and in unison. While he has certain specific duties, separate and distinct from those of the officer of the line or of the soldier in the ranks, yet the medical officer is a part of the army. Whether in the field, on the march or in camp, he has his position and must fit into it or there will be friction. Probably not one in fifty of those who have volunteered, or who will volunteer, know how to ride a horse, much less to manage it in maneuvers.[1] Then again, emergencies have arisen when it has been necessary for the medical officer to become an active combatant. In a word, there are some elementary, but most important, things for the army medical man to know, and to know thoroughly, or not only will he be in trouble but those under him may suffer. For instance, he must know the routine of getting supplies, the position of the sanitary personnel on the field in time of war, the disposition of the property of the wounded, and the method of reporting various activities. Undoubtedly, therefore, the first order that most commissioned medical reserve officers will receive will be to report to one of the training camps. Here they will spend from two to four months and then they may be transferred to the mobilization camps. Necessarily, there will be some exceptions in this matter of training, as in the case of those connected with base hospital units, and of others who have gone to France and England.

## DRAFT OF PHYSICIANS IN ENGLAND

On another page is an account of the recent developments in Great Britain as a result of the shortage of physicians. This is nothing less than the application of the selective draft to the medical profession. The decision of the government to draft medical men of military age was hastened, according to the *Lancet*, by the attacks made by submarines on hospital ships. It had been realized for some time, however, that demands for more medical officers could be met only with difficulty under the voluntary system. "Under that system," says the *Lancet*, "the country has received, and is receiving, the devoted assistance of thousands of medical men who have neither given heed to their financial present or their professional future, nor to the personal dangers of the medical soldier, as revealed in the ever-growing lists of our dead and wounded colleagues." It is the conditions that are so forcibly emphasized by this recent action of the War Office of Great Britain in resorting to the draft that has prompted the earnest appeal to the United States for physicians, which is being responded to so nobly.

1. All medical officers are mounted. Lieutenants and captains are supplied with horses by the government; majors furnish their own horses (THE JOURNAL A. M. A., May 12, 1917, p. 1416).

## INTENSIVE METHODS IN INFANT WELFARE WORK

Believing that the prevention of tuberculosis among young children would yield a return for the effort and money expended, and that such preventive work would be most efficient if carried out by a responsible unit in a restricted area, the Tuberculosis League of Pittsburgh arranged for an experiment covering eight blocks in a poor section of the city. The blocks were thickly settled by a mixed foreign population. The work of city agencies and charitable organizations was closely correlated and concentrated especially on infant welfare. Prophylactic clinics were held and careful treatment given slight ailments, such as noses and ears affected with discharges, and other conditions commonly neglected in such districts. Great pains were taken to teach the mothers and older daughters how to feed infants properly. At the same time a house to house survey was made and the nationality, housing conditions, sanitation and family income compared with the physical condition of each family. The response on the part of the mothers, foreign as well as American, was quite satisfactory; they were eager to learn the better ways of caring for infants, and were quick to realize the benefit to the whole family resulting from sound health of the baby. The work was continued for one year, and during that time the death rate in the area was 43 per thousand lower than for the whole ward—a strong indication of the great effectiveness of intensive work in infant welfare. It is unfortunate that the experiment, which was intended to cover fifteen years, was soon abandoned, largely, it is said, because of opposition to the methods as too paternalistic. In view of the undoubted effectiveness in preventing death and disease of such methods, they should receive much wider application.

## THE WASTEFUL NOSTRUM

In his younger days, H. G. Wells, the novelist, was a "chemist's assistant" — drug clerk. The first-hand knowledge he there obtained of the nostrum evil was turned to splendid account in his classic "Tono-Bungay," the life-history of a "patent medicine." In the closing chapter, where Mr. Wells moralizes on the lessons taught by the incidents related in the book, he questions the wisdom of the title he has given it. "I have called it *Tono-Bungay*, but I had far better have called it *Waste*." And any one at all familiar with the nostrum evil must agree with him. Waste, futile and yet monstrous; waste of money, waste of efficiency, waste of health, yes, waste of life itself are the indictments that stand fairly and squarely against the great majority of "patent medicines." In times such as those through which we are now passing it seems preposterous that an intelligent people should tolerate so tremendous a drain on its resources. It has been conservatively estimated that each year the United States spends $150,000,000 for nostrums. This, however, is but a fraction of the total loss from this cause. The waste of time, due to ineffective treatment, the resultant charges for medical attendance that would otherwise have been unnecessary, to say nothing of the amount spent for medical advice by those who, having nothing the matter with them, have been frightened by lurid advertisements into believing they were sick — all go to swell the huge financial burden imposed by the nostrum. If every worthless or fraudulent "patent medicine" were eliminated from the American market today, the public would be the beneficiary to the extent of better health and millions of dollars. The only ones who would suffer would be nostrum exploiters — and physicians. For, contrary to the popular belief, a belief assiduously instilled into the public mind by the "patent medicine" fraternity, the nostrum is the physicians' greatest business-getter. As we have often said, out of every ten men who are led to believe, by the scare-heads of some "kidney cure" advertisement, that a passing soreness in the lumbar regions means kidney disease, seven or eight of them will go to their physicians for the two or three who go to the drug counter. Thousands of sick, who, if properly treated at the outset would have been speedily returned to the ranks of the healthy, are brought, by reliance on the nostrum, to the place where long and expensive medical treatment becomes imperative. Whether or not we have reached the place where meatless and breadless days may be an economic necessity, there is no better time than the present for the American people to usher in a nostrumless year. The gain that would follow in health, efficiency and finances would be one more of the great surprises that the present world conflict has produced.

## THE RESPONSIBILITY OF THE COUNTY SOCIETY IN PREPAREDNESS

Every county medical society should appreciate its opportunity and realize its responsibility in the mobilization of the medical profession for war. Besides securing volunteers from its membership, there are two things which, if they are to be done, the county society must do. The first is to adopt measures by which, in their absence, the interests of those who volunteer shall be protected, so far as this is humanly possible. The sacrifice a physician makes in leaving his practice for a protracted period of time is unique. The bookkeeper, the clerk, the artisan, the clergyman, the merchant can be guaranteed his position on his return. The merchant, the banker, the farmer, the lawyer can arrange with another, or with his partner, to look after his business during his absence. But the physician's practice — his "business" — is different; there is a personal relationship between a physician and his patient that makes the transference of the patient from one practitioner to another almost, but not quite, impossible. In the great majority of instances, where there is an honest, earnest, fraternal effort on the part of the physicians of a community to do the right thing, they will succeed. This applies to keeping the enlisted physician's place in his community open for his return to civil practice. Already many societies have taken action in this connection.[1] We

1. Medical Mobilization and the War, The Journal A. M. A., April 14, 1917, p. 1131; April 21, 1917, p. 1190; April 28, 1917, p. 1270; May 5, 1917, p. 1331.

cannot emphasize too strongly the propriety of this, especially in communities in which this personal relationship of the family physician is recognized. The second is to consider the people's interests. In some communities which have but one physician it would be a public calamity to have that physician leave for the war. Yet the physician may consider his duty to his country greater than his duty to his community. This honorable ambition should not be discouraged, but the county society should consider how the needs of the people can be provided for, either by a locum tenens — who should be what the word actually means, a substitute for the time the doctor is absent — or by arranging with neighboring physicians to render the service. It is not probable that many county societies will have such problems on hand, but some undoubtedly will. In any event, THE JOURNAL urges every society which has not already done so to call a meeting to discuss the problems immediately before our profession. It should require but little effort at this time to get every member to such a meeting. The presidents and secretaries of county societies as well as the committees on medical preparedness have unusual responsibilities in this matter. Now is the time for action.

### MEDICAL STUDENTS AND THE DRAFT

The report of the Conference Committee of the Senate and House, on the bill authorizing the president to increase the military staff of the United States by selective draft, makes certain exemptions. These do not include the medical student; they do include theological students. Why theological students should be exempt we do not know; possibly it is on the supposition that they are "conscientious objectors." We can hardly believe it possible that Congress will pass this law without recognizing the importance of sustaining the continued production of medical men. France and England have suffered from neglecting or overlooking this point. The great cry in France and in England is for more medical men, and the need probably is just as great with the Central Powers, if the facts were known. The first demand on us after we became one of the allies was for medical men. If Congress accepts the conference report as it stands, the first "regulation" made by the War Department should exempt medical students.

### THE MEDICAL OFFICER A SOLDIER

Judging from a few letters which have been received, there are some who are considering making application for the Medical Reserve Corps, but who hesitate and ask for information because they do not know what their destination will be after they receive a commission, or whether they will have any choice in the matter. A few evidently fear that they may be sent to France, to the front; others, on the contrary, seem to fear that they may not be sent abroad, and may not get into real active service at the front. When a physician accepts a commission in the Medical Reserve Corps of the Army he, by that act, accepts a commission in the army itself and becomes a soldier. As a soldier, he obeys orders and goes where he is sent. If he likes it he smiles and goes; if he does not like it he smiles and obeys without grumbling—if he is a true soldier. This comment is simply a statement of fact which every member of our profession must bear in mind at the present time.

## *Medical Mobilization and the War*

**THE SELECTIVE DRAFT HAS PASSED. FIVE HUNDRED THOUSAND SOLDIERS WILL SOON BE IN TRAINING. FOR THESE MEN 3,500 PHYSICIANS ARE NECESSARY. WILL YOU BE ONE? IF YOU HAVE NOT ALREADY APPLIED FOR MEMBERSHIP IN THE MEDICAL RESERVE CORPS, DO IT NOW. WE WILL SEND YOU AN APPLICATION BLANK.**

### MEDICAL MILITARY INFORMATION FOR PHYSICIANS

**Any of the following mentioned pamphlets or circulars will be sent by The Journal on receipt of a stamped self-addressed envelope:**

**1. What the Civilian Doctor Called to Active Service with the Army Should Know, by Major W. J. Lyster; a reprint of three articles which appeared in The Journal, giving the duties of the physician in the zone of the interior, on the line of communication, and in the zone of the advance.**

**2. The Medical Corps of the Army as a Career, by Major R. E. Noble; reprinted from The Journal, March 31, 1917.**

**3. Rules for the Examination of Recruits; consisting of G. O. No. 66 and Circular No. 2, giving the regular technic of examination of recruits for the United States Army.**

**4. Examining Boards for Applicants for the Medical Reserve Corps; a list of boards officially constituted to pass on applicants for the Medical Reserve Corps.**

**5. Instructions to Officers of the Medical Reserve Corps; a list of sixteen points to receive the first attention of the reserve officers when called to active duty.**

**6. Information Regarding Application for Appointment in the Medical Reserve Corps.**

**7. Application Blanks for Appointment to the Medical Corps and to the Medical Reserve Corps.**

#### Organization of Hospital Units

To supplement and assist established military hospitals, the American Red Cross has organized a number of "Hospital Units." Such units, or detachments from them, may also be assigned to duty on hospital trains, hospital ships, or on any other military sanitary organization that the exigencies of the service may require. Hospital units may possibly be used to perform hospital service in connection with training, mobilization and concentration camps. As a general rule the organization of a hospital unit is approved in connection with a civil hospital which does not have a staff large enough to permit of the organization of a base hospital.

AN ARMY HOSPITAL UNIT is made up of one director, one adjutant, two chiefs of service, four staff surgeons, four staff physicians, one head nurse, twenty nurses, three clerks, who may be women, and such number of orderlies as may be necessary, not to exceed fifty without special authorization. All of the officers in an Army Hospital Unit will be commissioned in the Medical Reserve Corps of the Army. Orderlies will be enlisted in the medical department of the army. All nurses must be enrolled as Red Cross nurses.

A NAVAL HOSPITAL UNIT consists of one director and seven medical officers, without nurses, orderlies or equipment.

Whenever it is desired to form a Hospital Unit a letter should be addressed to the DIRECTOR-GENERAL OF MILITARY RELIEF, the American Red Cross, Washington, D. C., requesting authority to form such a unit and nominating a prospective director.

Hospital Units have already been organized as follows:

PHILADELPHIA, Presbyterian Hospital, Dr. John H. Jopson, director.
WEST CHESTER, N. Y., Dr. C. E. Getty, director.
SPOKANE, WASH., Dr. S. E. Lambert, director.
WHEELING, W. VA., Ohio Valley General Hospital, Dr. Frank LeMoyne Hupp, director.
RICHMOND, VA., Memorial Hospital, Dr. Robert C. Bryan, director.
NEW YORK CITY, Harlem Hospital, Dr. Lewis K. Neff, director.
NEW YORK CITY, Fordham Hospital, Dr. Alexander Nicoll, director.
NEW YORK CITY, Flower Hospital, Dr. R. S. Copeland, director.
PORTLAND, ME., Dr. W. L. Cousins, director.
MINNEAPOLIS, University of Minnesota Medical School, Dr. Frank Todd, director.
COUNCIL BLUFFS, IA., Dr. Donald McRae, director.
PITTSBURGH, Allegheny General Hospital, Dr. B. W. Caldwell, director.
FORT WAYNE, IND., Hope Hospital, Dr. Miles F. Porter, director.
CHARLOTTE, N. C., Dr. Addison G. Brenzier, Jr., director.
MEMPHIS, TENN., Memphis General Hospital, Dr. Battle Malone, director.
GRAND RAPIDS, MICH., Dr. Richard H. Smith, director.
FAIRFIELD, IA., Dr. J. Fred Clark, director.
NASHVILLE, TENN., Vanderbilt University, Dr. Richard A. Barr, director.

### Base Hospitals Ordered Abroad

As previously announced in these columns, base hospitals Nos. 2, 4, 5, 10, 12 and 21 are ordered to prepare for active service abroad. As is also known, No. 4 of Cleveland and No. 5 of Harvard University are in transit or, rather, probably have landed on the other side. Nos. 2, 10, 12 and 21 have been ordered to leave immediately. We give below the personnel of these four:

BASE HOSPITAL NO. 2, PRESBYTERIAN HOSPITAL, NEW YORK CITY. Commanding Officer, Major L. L. Hopwood, Medical Department, U. S. Army. Director, Dr. George E. Brewer, New York. Drs. William Darrach, Homer Swift, Fordyce B. St. John, John A. McCreery, Alwain M. Pappenheim, Sydney R. Burnap, W. A. Woolsey, Armitage Whitman, John P. Peters, Willard B. Soper, Louis Casamajor, A. R. Stevens, W. Barclay Parsons, Benjamin R. Allison, Malcolm McBurney, Roderick V. Grace, William F. Cunningham, Austin Hobbs, Gerhard Cocks, Henry S. Dunning and E. H. Raymond. The two last named are dentists.

BASE HOSPITAL NO. 10, PENNSYLVANIA HOSPITAL, PHILADELPHIA. Commanding Officer, Major Matthew A. Delany, Medical Department, U. S. Army. Director, Dr. Richard H. Harte, Philadelphia. Drs. George W. Norris, John H. Gibbon, Henry C. Earnshaw, Charles F. Mitchell, Edward B. Hodge, Arthur Newlin, Norris W. Vaux, William T. Shoemaker, John E. Sweet, William J. Taylor, Francis R. Packard, Edward Krumbhaar, Arthur H. Gerhard, Henry K. Dillard, William Drayton, J. Flick, William B. Caldwalder, John Joseph Cloud, John M. Cruice, Charles S. Jack and Edwin Shoemaker. The two last named are dentists.

BASE HOSPITAL NO. 12, NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, CHICAGO. Commanding Officer, Major Christopher C. Collins, Medical Department, U. S. Army. Director, Dr. F. A. Besley, Chicago. Drs. Milton Mandl, Kellogg Speed, Payson L. Nusbaum, M. R. Chase, Walter Nadler, Philip M. Dale, Sumner L. Koch, Adam G. Sherman, J. J. Lebovitz, Walter L. Strandberg, John K. Bird, S. W. Clark, C. W. Freeman, Philip L. Glaspel, William E. Harwood, Gerard N. Krost, Eugene F. Talbot, C. W. Robertson, A. H. Barnett, John Ross Neal, Robert W. Baker, Robert W. Eaton, John Henkin and Erling O. Ravn.

BASE HOSPITAL NO. 21, WASHINGTON UNIVERSITY MEDICAL SCHOOL, ST. LOUIS. Commanding Officer, Major James E. Fife, Medical Department, U. S. Army. Director, Dr. Fred T. Murphy, St. Louis. Drs. Malvern B. Clipton, Walter Fischel, Nathaniel Allison, Borden S. Veeder, Eugene L. Opie, Lawrence T. Post, Sidney I. Schwab, Meredith R. Johnston, Henry G. Greditzer, Hugh McCulloch, Warren R. Rainey, Charles H. Eyermann, Philip P. Green, Frederick B. Abbott, Arthur W. Proetz, Chesney, Roland F. Fisher, Allen A. Gilbert, Joseph W. Larimore, Howard H. Bell, Edwin C. Ernst, Levi Fuson, Fred J. Brockman and James A. Brown.

### Compulsory Mobilization of the English Medical Profession

On April 21, Lord Derby, secretary of state for war, addressed a letter to members of the medical profession in Great Britain stating that it had become essential to establish a large number of hospitals overseas in the various theaters of war, and that in order to allow this to be done with great rapidity it was essential to secure the services of every member of the medical profession who could possibly be spared from England. The war cabinet decided as the first step in this process that every medical man of military age—under 41 years—should be called up at once. Then it is to be determined whether he can be spared from his locality, and if not, steps will be taken for securing substitutes for his work. Every medical man summoned is instructed to communicate immediately with the Central Medical War Committee or the Scottish War Emergency Committee any circumstances which make it impossible for him to go. The date for the call was May 6.

Following the publication of Lord Derby's letter to the medical profession a discussion was held at a special joint meeting of the Central Medical War Committee of the British Medical Association and the Committee of Reference of the Royal Colleges in whose hands, up to the present, has been the responsibility for protecting the medical needs of the civilian community while meeting the requirements of the army. It has been left to this committee to determine how many and what physicians could be spared at any given time from civilian work in any particular community. The joint committee adopted a resolution to the effect that it could not continue this work unless the War Office would undertake not to grant any commission to a doctor even though volunteering for service whom the committees considered indispensable for civilian work for the time being. The reason for this action was the great shortage of physicians existing in several places. For instance, one town with a population of over 20,000 in which the chief industry is the manufacturing of chemicals and munitions, had but four physicians, all of military age. Another town with a population of over 60,000, in which the chief industry is ship building had but ten physicians, seven of whom were of military age, and in a country town with a population of over 20,000 there were four physicians of whom three were of military age. There are thus today in England numerous districts in which there is only one physician to over 5,000 people. The committee pointed out to the War Office that it would certainly be inadvisable to take all the physicians away from the first town mentioned and leave a population of 20,000 in a munitions area entirely without physicians. These facts were presented to Lord Derby under date of April 25. He replied on the same date as follows:

> I am in receipt of your letter of April 25, and in answer to it I beg to state that I agree that the procedure prevailing up to last week with regard to the selection of doctors shall be continued, and I will further agree not to give a commission to any doctor except on the recommendation of your Committee.
>
> Your Committee is asked to provide the Army with x doctors by May 1, and y doctors per week after that date until the requisite number z has been found. In the event of the number so asked for not being forthcoming, I must reserve to myself the right at any time to reconsider the position.
>
> I trust that this arrangement will be agreeable to your Committee, and that they will continue doing the excellent work for the War Office that they have done in the past.

### The Registration and the Draft

Registration and the selective draft represent two distinct steps in the process of securing an army by this method. Registration will consist simply of enrolling the names of all male residents of the United States between the ages of 21 and 30. Every male resident between the designated ages must be registered on the day set unless he is in the regular army, the navy, the national guard or naval militia, actually in the federal service. We presume that membership in the Medical Reserve Corps is equivalent to membership in the army. The enrolling is done in each voting precinct by a registrar appointed for the purpose. The duties of the registrar are mandatory, and performed under oath. He is liable to heavy penalty for making a false return or in any way being a party to favoritism or evasion. A similar penalty is imposed on the person who fails to register. Later comes the process of selection. This is made by lot from the names entered on the registration rolls. The exemptions and methods of selection are to be published later. To conduct the registration adequately, interpreters will be needed in the foreign sections of large cities to assist in answering questions on the registration cards. The War Department requests that volunteers for this work offer their services at once to the sheriffs of their respective counties, or in cities of 30,000 or over, to the mayor. In this work physicians practicing among those speaking a foreign language should be of special assistance.

### Prostitution to Be Suppressed, and the Sale of Alcoholic Beverages Regulated, About Military Establishments

The report of the conference committee of the Senate and House of Representatives on the bill authorizing the President to increase the military establishment of the United States, proposes that the president be authorized to make regulations governing the prohibition of alcoholic liquors in or near military camps and to the officers and enlisted men of the army, and that the secretary of war be authorized, empowered and directed during the present war to prevent prostitution about military establishments. In order to prevent the abuse of alcoholic liquors, no person may sell, supply, or have in his possession any intoxicating or spirituous liquors at any military establishment that is being used at the time for military purposes, but the secretary of war may make regulations permitting the sale and use of such liquors for medicinal purposes. It is made unlawful to sell any intoxicating liquor, including beer, ale or wine, to any officer or member of the military forces while in uniform, except as such regulations may permit. The power which it is proposed to vest in the secretary of war for the suppression of prostitution will enable him to do everything he deems necessary to suppress and prevent the keeping or setting up of houses of ill fame within such distances of any military establishment as he deems proper.

### Mobilizing the Medical Reserve Corps

During the past three weeks decided progress has been made in securing officers for the Medical Reserve Corps. For the week ending April 28, 341, for the following week, 284, and for the week ending May 12, 413 men were recommended for commission in the Medical Reserve Corps; that is to say, during these three weeks, 1,038 physicians were recommended for commissions. Our readers may be interested in knowing that up to May 10 between 800 and 900 applications had been sent in on the blanks appearing in THE JOURNAL, April 21.

### Progress in Organization of Base Hospitals

In addition to the twenty-nine base hospitals listed in THE JOURNAL, March 31, 1917, page 989, the following Red Cross base hospital units have been organized:

No. 30, UNIVERSITY OF CALIFORNIA, SAN FRANCISCO, Dr. Wallace I. Terry, director.

No. 31, YOUNGSTOWN CITY HOSPITAL, YOUNGSTOWN, OHIO, Dr. Colin R. Clark, director.

No. 32, INDIANAPOLIS CITY HOSPITAL, Dr. John H. Oliver, director.

No. 33, ALBANY HOSPITAL AND MEDICAL COLLEGE, ALBANY, N. Y., A. W. Elting, director.

No. 34, EPISCOPAL HOSPITAL, PHILADELPHIA, Dr. Charles H. Frazier, director.

No. 35, GOOD SAMARITAN HOSPITAL, LOS ANGELES, Dr. J. J. A. Van Kaathoven, director.

No. 36, COLLEGE OF MEDICINE FACULTY, Detroit, Dr. Bert R. Shurley, director.

No. 37, KINGS COUNTY HOSPITAL, NEW YORK, Dr. E. H. Fiske, director.

No. 38, JEFFERSON COLLEGE HOSPITAL, PHILADELPHIA, Dr. W. M. L. Coplin, director.

### Curtailment of Sanitary Appropriations During the War

In view of a reported tendency in some states to reduce the appropriation for sanitary purposes, in order to increase their appropriations for military ends, the Conference of State and Provincial Health Officers at its meeting in Washington, D. C., April 30, appointed a committee to wait on the conference of the governors of the states (which happened to be in session in Washington at the time of the meeting) to urge on the state and territorial governments the importance of maintaining and even of improving civil sanitary administration, in view of the intimate relation between the health of the people generally and the health of the military and naval services.

### Local Civil Service Lists to Be Used by Federal Government

The President has issued an order that the United States Civil Service Commission is authorized in its discretion, to adopt any eligible register of any state, county or municipal civil service commission to meet the needs of the federal government for appointment in the civil service. The United States commission must be satisfied that the examinations by the local commissions conform to the requirements of competition prescribed by the United States Civil Service Acts and Rules, and that the examinations are fairly conducted and equivalent to its own. The eligibles thus utilized may be certified and appointed in the order of their grades in the same manner as though they had passed the federal examination, and will be entitled to all the rights and privileges pertaining to persons examined under the United States Civil Service Act. This action is of interest to medical men who are connected with examining boards for the various medical positions. They may now avail themselves of local civil service lists for their clerical help instead of selecting employees from the eligible list of the United States Civil Service Commission.

**Conservation of Medical Practices During the War.**—The Medical Society of the District of Columbia, on May 9, by a unanimous vote adopted the principles for the conservation of the medical practices of physicians temporarily absent on military duty as printed in THE JOURNAL, April 14, 1917, page 1131. The executive committee was instructed to report to the society within two weeks a workable plan for carrying these principles into effect in the District of Columbia.

**Practice of Physicians in Military Service.**—A committee appointed by the William Pierson Medical Library Association, Orange, N. J., to consider protective action for medical men who join the military forces has made a report which was adopted by the association, April 20. It is proposed to organize the William Pierson Medical War Committee to care for the practice of medical men of Essex County, N. J., outside of Newark, who may join the military forces of the nation.

**The First Detail from Illinois.**—The Military Preparedness Committee of Illinois, in response to a telegram from the War Department, has forwarded the names of the following twelve officers, who are nominated to sail for France in June: Drs. John E. Kelley, Fred W. Moeller, Charles H. McKenna, John G. Frost, Hugh J. Duffy, James Redmon, Lester L. Long, Alexander H. Barnett, Leon Unger, Walter J. Sullivan and Cyril J. Larkin. The twelfth man is H. H. Pullinger of Algonquin.

**Medical Reserve Division Organized.**—At a meeting recently held at the First Regiment Armory, Newark, the New Jersey Division of the Medical Reserve Corps, U. S. Army, was organized and the following officers were elected: president, Lieut. David A. Kraker, Newark; vice president, Lieuts. Martin W. Reddan, Trenton; James L. Evans, Woodcliff, and Harrison S. Martland, Newark; secretary, Lieut. Joseph McDonald, Jr., East Orange, and treasurer, Lieut. Ambrose F. Dowd, Newark.

**An Appeal Made for Siberian Ambulance Companies.**—Mr. Kalpaschnikoff-Camac, commander of the Twenty-First Flying Column of the First Siberian Corps of the Russian Army, has come to the United States to enlist the sympathy and support of the American people for his Siberian Regiments which are greatly in need of ambulance service. He asks for subscriptions to provide ambulances for this work and asks donors to make checks payable to the Siberian Ambulances, and to mail them to the National City Bank of New York, 55 Wall Street, New York.

**Ambulance Unit from Hopkins.**—An ambulance unit is being equipped at the Johns Hopkins University for immediate service in France. This action is in response to the War Department's call for 1,400 men for ambulance work. The units will go to France as soon as the men are organized and equipped. Each unit will consist of thirty-six men, divided as follows: a sergeant, two corporals, three mechanics, two cooks, two clerks, two orderlies, twenty-four ambulance drivers. At the Johns Hopkins University at Homewood about thirty students have already applied for service in the unit.

**State Committee for Porto Rico on Red Cross Medical Service.**—The Bulletin of the Medical Association of Porto Rico states that the following doctors have been appointed by the National Committee at Washington to organize the State Committee on Red Cross Medical Service: W. F. Lippitt, B. K. Ashford, W. A. Glines and J. Aviles. The people of Porto Rico are delighted at the passage of the Jones bill conferring citizenship on the inhabitants and a more liberal form of government. The Medical Association of Porto Rico was one of the first to become affiliated with the American Medical Association, without waiting for citizenship. A committee has been appointed in the local associa-

tion to aid in the celebration in honor of these historical political events.

**Illinois Accepts Responsibility.**—At the annual meeting of the Illinois State Medical Society, in Bloomington, May 9, resolutions were adopted calling on every member to accept his full share of the war burden; recommending that all members that are between 22 and 35 years of age, report immediately for examination for war service, and that all between 35 and 55, enrol in the Medical Reserve Corps; that it be considered the patriotic duty of physicians who remain at home, to take over the private practice of those in the military service, pay a just share of fees to the families of the absent physician and after the war return the practice, inviolate. The society also recommends the total abolition of alcoholic drinks in military camps.

**Baltimore Doctors Off for the Front.**—Dr. J. A. Campbell Colston and Dr. William G. Jack, members of the surgical staff of the James Buchanan Brady Institute at the Johns Hopkins Hospital, have left for France. Nothing but the receipt of their commissions, their equipment and their orders regarding the time of departure and the details of their duties, stand in in the way of the departure of the rest of the "first 15," among whom are the following: Drs. David M. Davis, Baltimore, Brady Institute, Johns Hopkins Hospital; Earle G. Breeding, Washington, D. C., University of Maryland; Dr. Francis F. Callahan, Seaview Hospital, New York; William F. Jenkins, Seaview Hospital, New York; John E. Evans, University of Maryland; Dr. William H. Toulson, Baltimore, University of Maryland; Samuel O. Pruitt, Bayview Hospital; William F. Williams, Bayview Hospital; George L. Stickney, University Hospital, and Maurice C. Pincoffs, Baltimore.

**Military Status of Base Hospitals.**—A Kansas physician writes:

1. "Please inform me of the military status of the Red Cross base hospitals which have been organized in this country. 2. Do the members of the staff receive regular commissions in the Army Medical Corps? What is their remuneration?"

1. In time of war the service and equipment of the American National Red Cross is subject to orders by the War Department and becomes a part of the sanitary service of the land forces. This, of course, includes the base hospitals. When a base hospital is taken over by the War Department, the personnel thereby becomes subject to military laws and regulations.

2. Before a member of these units would be qualified for transference to the medical department, he necessarily would have to be commissioned in the Medical Reserve Corps, and would receive pay according to his rank.

**Medical Schools Cooperate with the Navy.**—The Jefferson Medical College, Philadelphia, and the Medical Department of Harvard University and the Boston City Hospital, Boston, have tendered to the surgeon-general of the navy the facilities at their disposal, for the special training of physicians who are about to enter the Medical Corps of the Navy. Their offers have been accepted, and plans are being made to conduct at the institutions named special courses of instruction for physicians who have passed their examinations for admission to the regular medical service of the navy. The courses thus laid out will permit the simultaneous training of a larger number of prospective naval surgeons than can be accommodated at one time at the Naval Medical School at Washington. Should the exigencies of the service permit, however, all officers will be given the advantages of a course at the Naval Medical School before being assigned to active duty.

**Maryland Doctors Ready to Serve.**—Already 175 Maryland doctors have received or are awaiting commission in the Medical Officers Reserve Corps, U. S. Army, including the fifteen who have been selected for immediate service in distributing hospitals in France. Of this number seventy-one have undergone mental and physical examinations for the army service. The examinations have been given at the Johns Hopkins Hospital by a board composed of Drs. John Staige Davis, Cary B. Gamble, Jr., Arthur M. Shipley and Lloyd B. Whitham. Ten more Maryland doctors will leave for the front about the first of June, and probably ten more will go in July, under the War Department's plan to send 200 physicians a month to France.——Letters are being sent out to all physicians in Baltimore and the state by Drs. Hugh H. Young and Gordon Wilson, chairman and secretary, respectively, of the Committee on Medical Preparedness, asking them to state whether they are ready to go to the front, and to those who have decided to remain, whether they will take over the practices of the physicians going to the front until their return.

**Psychiatric Base Hospital for Maryland.**—The Maryland Psychiatric Society held a meeting at the Medical Library, Baltimore, May 10, to organize a psychiatric base hospital unit, and to offer their services and facilities in the state to the government, for the purpose of affording care and treatment for soldiers and sailors who will suffer from nervous and mental disorders as a result of the war. A committee was appointed to confer with the governor relative to the expense of the unit. The most suitable location for the hospital is believed to be at the Spring Grove State Hospital, Catonsville, in the recently completed Psychopathic Reception Hospital Building, which is at present unoccupied, and can be used for treating between 200 and 300 patients. All that is needed to equip this building and place it at the disposal of the government within sixty to ninety days is an appropriation of about $40,000, which the special session of the legislature will be asked to provide. The members of the committee are: Drs. Arthur P. Herring, Baltimore, chairman; Joseph C. Clark, Sykesville; J. Percy Wade, Catonsville; Robert P. Winterode, Crownsville; William R. Dunton, Jr., Townson; Andrew C. Gillis, Baltimore, and Henry J. Berkley, Baltimore.

**Michigan State Medical Society Meets in Special Session.**—The Michigan State Medical Society convened in special session in the Masonic Temple, Battle Creek, on May 10. The purpose of the meeting was to consider the duty of the profession in the war. Addresses were made by Dr. Andrew P. Biddle, Detroit, president of the Michigan State Medical Society, and other recognized leaders of the profession of the state emphasizing the obligations which must be met by physicians and calling for volunteers. Arrangements were made so that the medical boards authorized to pass on applications for the Medical Reserve Corps met during the day, received applications and examined the applicants. Dr. Reuben Peterson, Ann Arbor, chairman of the state committee on medical preparedness, made a report which outlined the activities taken by the component societies of the state association in providing the quota of physicians for the government services which Michigan should furnish and called attention to the work still to be done.

A report from the council was received and adopted. This report authorized the council, at its discretion, to omit the annual session of the state organization which would ordinarily have convened in Battle Creek during the fall of this year.

A motion was adopted requesting that medical students and premedical students who agree to place their services at the command of the medical departments of the government, at the termination of their training, be given some insignia to indicate that they are following a course approved by the federal government.

**Swiss Medical Profession on a War Footing.**—War has not directly invaded Switzerland, but the military forces have been kept on a war footing for nearly three years. Dr. E. de Buman, in a recent address before a medical organization, told how this had affected the profession. He commented on the multiplicity of duties it entailed, the sacrifices that had to be made and the devoted services that had been lavished. "For some," he said, "there were the sudden separations, the sacrifice of a career laboriously built up, the crumbling of the dreams for the future. For others there was the extra work at the hour when weariness and age called for taking things less strenuously; for all it was the obligation to break with a life of well organized work and to sacrific on the altar of patriotism the most legitimate and the dearest aspirations. Our younger confreres left, full of zeal, to respond to the appeal of the military authorities. The older men added to their work in the hospitals and elsewhere an extra amount of labor and efforts, while the still older ones shouldered anew the burdens which they had partially shifted to younger men. . . . From behind the French front, in Belgium, in the Balkans and elsewhere, we hear of the devotion of Swiss physicians who are leading special missions at many points. In Switzerland it has been the medical profession that has made the most lavishly the greatest sacrifices. . . . The physicians of Switzerland took up the task of superintending the exchange of incapacitated prisoners of war, and the care of the thousands and thousands of interned sick and wounded. This whole matter was placed exclusively in the hands of the medical profession. And it can well be proud of the immense amount of good it has done and is doing in these lines."

# Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

## ARKANSAS

**New Society Organized.**—The Randolph County Medical Association was organized recently at Pocahontas. Dr. R. R. Johnson, Holmes, was elected president; Dr. William E. Hughes, Pocahontas, secretary, and Dr. Carl J. Scheid, Pocahantas, treasurer.

**Medical Examiners Named.**—The governor, on May 8, reappointed Dr. Oran D. Ward, England, and Dr. Thomas J. Stout, Brinkley, members of the State Board of Medical Examiners, and appointed Dr. Hugh H. Henry, Eagle Mills, a member of the board to succeed Dr. James C. Wallis, Arkadelphia, who was ineligible on account of having served two terms on the board.

**New State Officers.**—At the forty-first annual meeting of the Arkansas Medical Society, held in Little Rock, May 1-3, under the presidency of Dr. Merrieman L. Norwood, Lockesburg, Jonesboro was selected as the next place of meeting and the following officers were elected; president, Dr. William Breathwit, Pine Bluff; vice presidents, Drs. Homer A. Stroud, Jonesboro; Edward F. Ellis, Fayetteville, and William W. York, Ashdown; secretary, Dr. Clinton P. Meriwether, Little Rock (reelected); treasurer, Dr. William R. Bathurst, Little Rock; delegates to the American Medical Association, Drs. William T. Wootton, Hot Springs; Thomas F. Kittrell, Texarkana, and Clinton P. Meriwether, Little Rock, and councilors, first district, Dr. John H. Stidham, Hoxie; third district, Dr. Henry H. Rightor, Helena; fifth district, Dr. Foster Jarrell, Huttig; seventh district, Dr. James E. Jones, Sheridan, and ninth district, Dr. Leonidas Kirby, Harrison.

## ILLINOIS

**Smallpox at Stronghurst.**—On account of the prevalence of smallpox at Stronghurst, where thirty-four cases have been reported, Dr. Edwin B. Godfrey, Springfield, of the state board of health, has been sent to take charge of the situation. All public meetings have been prohibited, churches and schools have been closed and general vaccination has been made.

**Public Health and Welfare Meeting.**—The first annual convention of the Illinois Public Health and Welfare Association was held in Springfield, April 12, under the presidency of Dr. George Thomas Palmer, Springfield. The presidential address described the formation and character of the association. In the absence of Dr. James W. Pettit of Ottawa, Mr. Thurber read a paper on the general subject of tuberculosis control. The association adopted resolutions endorsing the efforts of the newly created department of public health as regards the training and licensure of midwives; the safeguarding of the health of the Illinois troops especially against tuberculosis, and the senate bill which gives the state department of public health supervision over the installation and operation of public water supplies and sewerage; urging the governor and legislature to make adequate appropriations for the proper conduct of the state department of public health in all its activities, and endorsing the efforts of the Illinois Society for the Prevention of Blindness to prevent blindness and conserve the vision of citizens of the state.

### Chicago

**Personal.**—Dr. Charles P. Caldwell has been reelected president of the board of directors of the Municipal Tuberculosis Sanitarium and Mr. T. Bowden De Forest has been elected secretary to succeed Dr. John Dill Robertson.——Dr. Frank Billings has been named as secretary of the Illinois State Council of Defense.

**Smallpox.**—Five cases of smallpox were discovered near Forty-Seventh and Federal Streets, May 2. Forty vaccinators were ordered to go to this district and vaccinate all those who had not been vaccinated recently. During the first four months of 1917, sixty cases of smallpox were reported, more than for both 1915 and 1916.

**The Ricketts Prize.**—On May 3, the anniversary of the death of Dr. Ricketts from typhus fever, the Howard Taylor Ricketts prize for research by students in the departments of pathology, bacteriology, and hygiene in the University of Chicago was awarded to Enrique E. Ecker, for his work entitled, "The Pathogenic Effect and the Nature of a Toxin Produced by Bacillus Paratyphosus B."

**Hospital Purchases Building Site.**—The Deaconess Institute of the Swedish Evangelical Lutheran Church has purchased the property of the United States Brewing Company at Garfield Avenue and Sedgwick Street as the new Augustana Hospital. The property is 379 by 268 feet. The consideration named in the deed is $100,000 and the buildings are expected to cost between $80,000 and $90,000.——Mr. Charles J. Happel has been promoted from business manager to general superintendent of the Municipal Tuberculosis Sanitarium.——Dr. Maximilian Herzog has been appointed superintendent of research work at the institution.——Mr. Frank E. Wing, business director of the sanatorium, has been appointed general secretary of the United Charities, Rochester, N. Y.

**State Medical Society Meeting.**—At the sixty-seventh annual meeting of the Illinois State Medical Society, held in Bloomington, May 15-17, under the presidency of Dr. William L. Noble, Chicago, the following officers were elected: president, Dr. Elmer B. Cooley, Danville; president-elect, Dr. Edward W. Fiegenbaum, Edwardsville; vice presidents, Drs. Edwin P. Sloan, Bloomington, and Sadie Bay Adair, Chicago; secretary, Dr. Wilbur H. Gilmore, Mount Vernon; treasurer, Dr. A. J. Markley, Belvidere; councilors, first district, Dr. Emil Windmueller, Woodstock; second district, Dr. Edwin S. Gillespie, Wenona, and eighth district, Dr. Cyrus E. Price, Robinson; delegates to the American Medical Association, Drs. Don W. Deal, Springfield; Roy R. Ferguson, Chicago; Charles J. Wahlen, Chicago; Alban L. Mann, Elgin; William O. Krohn, Chicago, and Clarence B. King, Chicago. Springfield was selected as the meeting place for 1918.

## INDIANA

**Barber Shops Closed.**—Complying with an order issued by the state health commissioner, all barber shops in Hartford City have been closed for disinfection on account of the prevalence of "barber's itch."

**New Building for University.**—Steps have been taken to insure the erection of a new building for the Indiana University School of Medicine on a site near the Robert W. Long Hospital, Indianapolis.

**Society Reorganized.**—Physicians of White County met at Monticello, April 20, and reorganized the White County Medical Society, electing the following officers: president, Dr. Guy R. Coffin, Monticello; vice president, Dr. Ross M. Reagan, Monon; secretary, Dr. Homer B. Gable, Monticello, and treasurer, Dr. Madison T. Didlake, Monticello.

**Personal.**—Dr. Wilbur R. Hurst has been appointed local surgeon of the Louisville and Nashville Railway at Evansville, succeeding Dr. Pitt Y. McCoy, deceased.——Dr. Mitchell O. De Vaney, Indianapolis, has been appointed health commissioner of Marion County to succeed Dr. Jay D. Nusbaum. ——Dr. Joseph Rilus Eastman, Indianapolis, has returned after ten months in charge of an army base hospital in Vienna.

## KANSAS

**McCormack Lectures at Lawrence.**—Dr. Arthur T. McCormack, secretary of the Kentucky State Board of Health, delivered a course of lectures at the state university, Lawrence, during the last week of April and also attended the meeting of the city and county health officers, which was held in that city.

**State Medical Society Meeting.**—At the fifty-first annual meeting of the Kansas Medical Society, held in Salina, May 2-4, under the presidency of Dr. James W. May, Kansas City, the following officers were elected: president, Dr. Charles S. Huffman, Columbus; vice presidents, Drs. Tyler D. D. Blasdel, Parsons; Elmer E. Morrison, Great Bend, and Henry E. Haskins, Kingman; secretary, Dr. John F. Hassig, Kansas City, and treasurer, Lewis H. Munn, Topeka; delegate to the American Medical Association, Dr. James W. May, Kansas City; councilors, fourth district, O. Portis Davis, Topeka; fifth district, John J. Brownlee, Hutchinson, and third district, J. S. Mitchell. Kansas City was selected as the place of meeting for 1918.

## MARYLAND

**Johns Hopkins Hospital Needs Money.**—The trustees of the Johns Hopkins Hospital have issued a letter to a limited

number of persons in which they draw attention to the fact that the institution is in need of the sum of about $30,000 to cover a deficit caused not alone by the increase in the cost of supplies, but also of the heating material of the institution. The hospital trustees feel that they will have to close the Johns Hopkins Convalescent Home for Crippled Children, one of the branches of the hospital, if sufficient sums are not contributed to enable them to keep this institution open. The main hospital is crowded and there is a waiting list of many persons who need medical attention.

**Packing House at State Hospital.**—The management of the Springfield State Hospital, at Sykesville, has adopted a plan by which it expects to increase the farm products at the institution. Last year Dr. Joseph C. Clark, the superintendent, had a small packing house erected at the institution and in this some 4,000 gallon cans of tomatoes were packed, also 3,000 cans of apples and peaches. This spring the plant will be enlarged and an effort to can vegetables in sufficient quantities to supply the hospital. The labor of preparing the fruit for packing will be done by women patients; some forty-five will be detailed to this work. In addition to conserving the resources of the hospital, the management thinks that employment for the women inmates will be of great value.

## NEBRASKA

**County Society Organizes.**—Physicians of Antelope County met at Neligh, April 23, and perfected the organization of the Antelope County Medical Association, electing Dr. Stanley C. Clements, Neligh, president, and Dr. Uen S. Harrison, Topeka, secretary-treasurer.

**State Medical Society Meeting.**—The Nebraska State Medical Association held its forty-ninth annual convention at Lincoln, May 8-10, under the presidency of Dr. William S. Milroy, Omaha, and the following officers were elected: president, Dr. Charles L. Mullins, Broken Bow; vice presidents, Drs. Lucien Stark, Hartington, and Asa W. Montgomery, Stella; secretary, Dr. Joseph M. Aikin, Omaha (reelected); treasurer, Dr. Alexander S. von Mansfelde, Ashland, and librarian, Dr. William P. Wherry, Omaha.

## NEW JERSEY

**Course in Sanitary Science.**—Rutgers College, New Brunswick, announces the establishment of a course in sanitary science for the special preparation of public health officers.

**Public Health Study.**—The first meeting in a course of study on public health, one of the activities of the Newark branch of the National League for Women's Service in the local board of health, was held in the health department auditorium, May 7, when boards of health, sanitary ordinances and the health code were discussed.

## NEW YORK

**Whitney Drug Bill Signed.**—Governor Whitman has signed the Whitney committee's bill strengthening the law controlling the sale and distribution of habit forming drugs and providing that state health authorities may issue small amounts of narcotics in an effort to cure addicts.

**Typhoid Lawsuits Settled.**—The sixty-five lawsuits growing out of the typhoid fever cases which followed a trip of national guardsmen of Rhode Island, on the steamer *Rochester*, at the time of the Perry Centennial Celebration at Buffalo, was settled April 28, on a basis of $110,000 cash. The fever was traced to bad water furnished on the steamer, and fifty-nine cases of typhoid fever with six deaths resulted.

**Personal.**—Dr. Daniel S. Burr has resigned after eighteen years' service as health officer of Binghamton, and on his retirement was presented with a handsomely engraved cane by the employees of the board of health.——The completion by Dr. Louis P. Faust, Schenectady, of forty years in the practice of medicine, was celebrated, April 10, by the Schenectady County Medical Society, which gave a dinner in honor of Dr. Faust, at the Mohawk Club.

**Meeting of Women Physicians.**—The eleventh annual meeting of the Women's Medical Society of New York State was held in Utica, April 23, under the presidency of Dr. Eveline P. Ballintine, Rochester. The following officers were elected: president, Dr. Emily Dunning Barringer, New York; vice presidents, Drs. Marie L. Chard, New York; Mary T. Greene, Castile, and Florence I. Staunton, Utica; secretary, Dr. Ethel Doty Brown, New York, and treasurer, Dr. Phoebe M. Van Voast, New York.

### New York City

**Oral Hygiene Week.**—The week beginning May 13 was celebrated in this city as "Oral Hygiene Week." Representatives of the various dental societies, the department of health and the department of education have cooperated to make the program of the week interesting and instructive. The usual methods, lectures, lantern slides and moving pictures, posters, pamphlets, toothbrush drills, etc., were employed to awaken public interest.

**Instruction in Diagnosis of Pulmonary Tuberculosis.**—The courses of instruction in contagious diseases given to the practicing physicians of the city during the past two years by the department of health have been so well received that it has been decided to inaugurate a similar course of instruction in the early diagnosis of pulmonary tuberculosis. The courses are of two weeks' duration, three sessions a week, and will be held in the tuberculosis clinics of the different boroughs. There are no fees, but physicians enrolling are expected to attend regularly. Applications may be made in writing to Dr. Bertram H. Waters, Bureau of Preventable Diseases, Department of Health, 139 Centre Street. The application should state the physician's choice for morning or afternoon course.

## NORTH CAROLINA

**District Physicians Meet.**—At the annual meeting of the Ninth District Medical Society, held in Hickory, Mooresville was selected as the next place of meeting; Dr. Henry C. Menzies, Hickory, was elected president, and Dr. Andrew E. Bell, Mooresville, vice president.

**Memorial Service for Aviator.**—Memorial services for Sergt. J. R. McConnell, aviator in the French Service who was killed, March 18, were held at Carthage, April 1, and it was decided that the infirmary at the Eureka Farm Life School be named the McConnell Memorial Hospital.

**Personal.**—Dr. Julian G. Busby, Salisbury, has been forced to give up his practice for several months on account of a nervous breakdown, and is under treatment at Johns Hopkins Hospital, Baltimore.——Dr. Hubert A. Royster, Raleigh, was the guest of honor at the April meeting of the Pasquotank-Camden-Dare Counties Medical Society.

**New Members of State Board.**—The governor has appointed Dr. J. Howell Way, Waynesville, a member of the state board of health for a term of six years succeeding himself, and Dr. Edward C. Register, Charlotte, a member to succeed Dr. William O. Spencer, Winston-Salem. The state medical society elected Drs. Charles O'H. Laughinghouse, Greenville, and Thomas E. Anderson, Statesville, members of the state board of health, to succeed themselves. At the meeting of the board for organization, Dr. J. Howell Way was elected president to succeed himself.

**State Medical Society Session.**—The sixty-third annual meeting of the Medical Society of the State of North Carolina, was held in Asheville, April 17-19, under the presidency of Dr. Charles O'H. Laughinghouse, Greenville. Pfnehurst was selected as the place of meeting for 1918, and the following officers were elected: president, Dr. Isaac W. Faison, Charlotte; vice presidents, Drs. William DeB. MacNider, Chapel Hill, Joseph B. Greene, Asheville, and Benjamin F. Royal, Morehead City; secretary, Dr. Benjamin K. Hays, Oxford (reelected), and treasurer, Dr. William M. Jones, Greensboro. The dominant subject at the meeting was medical preparedness. Strong arguments regarding the need of the country for medical officers were made by Drs. George W. Crile, Cleveland, and John W. Long, Greensboro, and a number of physicians took their examinations at this time for the Medical Reserve Corps.

## NORTH DAKOTA

**Hospital News.**—The General Hospital Association, Minot, has purchased for $21,000 the McKeane property, as a site for the new hospital. On this site a building will be constructed at a cost of $100,000. A campaign is on foot at Hazen to raise $25,000 with which to build a hospital.

**Personal.**—Dr. Jacob F. Brenckle has been appointed surgeon for the Minneapolis, St. Paul & Sault Sainte Marie Railway Company at Kulm.——Dr. Charles J. McGurren, Devil's Lake, has been reappointed secretary of the state board of health.——Dr. Joseph P. Weyrens, Taylor, has been appointed a Fellow of the Mayo Foundation, Rochester, Minn.

## PENNSYLVANIA

**Personal.**—Dr. Eugene Swayne, Philadelphia, has been appointed a major in the Medical Corps and assigned to command field hospital No. 3, Philadelphia.——Dr. Daniel E. Sable of Pittsburgh has been appointed major in the Medical Corps and assigned to the First Artillery.

### Philadelphia

**Tyson Testimonial Dinner.**—At the testimonial dinner (May 11) given by the Philadelphia County Medical Society to Dr. James Tyson on his retirement after fifty-four years of practice, Dr. Hobart A. Hare was toastmaster and addresses were made by the following speakers: Dr. Henry D. Jump, president of the Philadelphia County Medical Society; Dr. Abraham Jacobi, New York; Dr. William H. Welch, Baltimore; Dr. James W. Holland, and Dr. Edward Martin. Besides Drs. Jacobi and Welch, the out-of-town guests included Drs. Theodore C. Janeway, Baltimore; Lewellys F. Barker, Baltimore; Frederick C. Shattuck, Boston; George Dock, St. Louis, and Cyrus Lee Stevens, Athens, Pa.

## CANADA

**Verdict on Chiropractic.**—Investigating the death of a M. C. R. engineer in St. Thomas, Ont., who died from the effects of typhoid fever while under the treatment of a chiropractor, a coroner's jury returned a verdict that his death was due to fever, lack of nourishment, and improper treatment. They recommended: "We strongly recommend to the city solicitor or proper officials that the provincial government be petitioned with a view to compelling chiropractors to pass their matriculation, and define in their diplomas the diseases in which they are entitled to practice. We further are strongly of the opinion that they should not be allowed to mislead the public by their professional advertising."

**Ontario Medical Commission.**—Mr. Justice Frank Hodgins, the commissioner, held a session of the commission on May 11 and 12, in the Parliament Building, Toronto. Dr. John Ferguson, retiring president of the Academy of Medicine, appeared before the commission and read a paper from the point of view of the medical practitioners which was authorized by the academy. He declared that osteopaths and chiropractors were not scientists, claiming that they were but rubbers and manipulators, and described their pretensions and treatments as "diabolical and shameful." In his opinion the chiropractors were offshoots of the osteopaths, and that while once they worked together, they were now separated. He further declared that Christian Scientists were not practitioners of medicine. Justice Hodgins expressed his gratification that the medical profession had placed their views in writing through Dr. Ferguson, and asked the Christian Scientists to do likewise, stating that a day would be set for hearing their side of the question.——Surg.-Gen. John T. Fotheringham, C. M. G., also appeared before the commission and outlined the treatment of soldiers during his two years at the front, as well as in command camps. The treatment, which consisted of physical exercises, baths, heat and light, he declared had proved very satisfactory. It was one largely of recent growth, but the work was being done under experienced medical men and the results were very satisfactory. Justice Hodgins read a summary of the treatment from a paper by Major R. Tait Mackenzie, A. M. A., in which he showed that 50 per cent. of the men so treated were able to return to the firing line, while a Belgian doctor declared that at least 35 per cent. of the patients he had treated were soon made fit again. Surg.-Gen. John T. Fotheringham declared that the training could not satisfactorily be obtained during the student's undergraduate course, but should be taken up in postgraduate course; and any doctors he had working under him in these cases would have to take the officers' training course. There were no civil hospitals that the general knew of that were fitted up as the hospitals at command camps in England were; at any rate not to the same extent, and a separate building was almost needed.——Lieut.-Col. Irving H. Cameron, Toronto, informed the commission of what he had learned in England while connected with the Duchess of Connaught Hospital. There had been a great stimulation in the use of these methods and a great advance in experience. The treatment was used for fractures, dislocations, sprains, and gunshot wounds, but he could not say whether surgical cases were treated more largely than medical cases.——Dr. Charles R. Dickson, Toronto, had some complaints to make to the commission. He objected to the Roentgen-ray treatment being given at the General Hospital, Toronto, by one who was not a medical man; and he thought the Toronto General Hospital should not advertise about its treatment for different things, as it was considered unethical for a medical man to advertise. Justice Hodgins asked Dr. Dickson to give him the dates of said advertisements, and he would look into the matter. Dr. Dickson thought medical men should pay more attention to the teaching of psychology; then they would not have to bother their heads about chiropractors et al.

## GENERAL

**Railway Surgeons Elect Officers.**—At the annual meeting of the Association of Railway Chief Surgeons, held in Chicago, May 7, the following officers were elected: president, Dr. Daniel Z. Dunott, Baltimore; vice president, Dr. Arthur M. Hume, Owosso, Mich.; executive board, Drs. Oscar Leseure, Detroit; Clarence W. Hopkins, Chicago, and Duncan Eve, Nashville, Tenn., and secretary-treasurer, Dr. Louis J. Mitchell, Chicago (reelected).

**New Hospital in Porto Rico.**—The new Presbyterian Hospital at Santurce, Porto Rico, was recently dedicated with much ceremony. It is built entirely of concrete and cost $145,000. The Medical Association of Porto Rico was represented at the ceremonies by Dr. Toro, the vice president, who remarked in his address that nothing in a country is such an index of the degree of civilization it has attained as the hospital.

**"Patent" and Proprietary Medicines Dentifrices, etc., to Be Taxed.**—The War Revenue Bill reported to the United States House of Representatives, on May 9, proposes a tax on proprietary and so-called patent medicines, whether for human beings or for animals, amounting to 5 per centum of the price for which sold. The tax is to be collected on all medicinal preparations, compounds, or compositions the manufacturer or producer of which claims to have any private formula, secret, or occult art for making or preparing, or which are prepared or sold under any letters patent or trade mark. The tax is to be applicable likewise if the substances are prepared by any formula, published or unpublished, and are held out or recommended by the manufacturers or sellers as proprietary medicines or proprietary medicinal preparations, or as remedies or specifics for any disease or affection relating to the human or animal body. A like tax is to be collected on petrolatums, tooth and mouth washes, dentifrices, tooth pastes, and toilet soaps and powders.

**Conference on Habit-Forming Drugs.**—A conference on habit-forming drugs, called by the National Drug Trades Conference, met in Washington, D. C., May 1 and 2. The National Drug Trades Conference itself was represented by delegates from its constituent organizations, the American Pharmaceutical Association, the National Wholesale Druggists' Association, the National Association of Retail Druggists, the American Association of Pharmaceutical Chemists, the American Drug Manufacturers' Association (formerly the National Association of Manufacturers of Medicinal Products), and the Proprietary Association of America. About twenty-five persons were present, including representatives from the United States Navy, the United States Public Health Service and the United States Internal Revenue Office. James H. Beal, Urbana, Ill., representing the American Pharmaceutical Association, submitted an analysis of the answers to a questionnaire sent by him to sixty-five members of the wholesale drug trade. Sales of narcotics sold on the official order blanks of the Internal Revenue Office showed an apparent average diminution of 66.2 per cent. Sales of proprietary compounds exempt under section 6 of the Harrison Narcotic Law showed diminished sales, according to eleven of those who responded to the questionnaire, amounting to from 10 to 80 per cent., but thirty-four others who responded said that there had been little or no change. Of the nonproprietary compounds exempt from the operation of the law, including paregoric, there had been increased sales. R. C. Stofer of Norwich, Conn., representing the American Association of Pharmaceutical Chemists, which comprises forty establishments selling to 40,000 physicians, reported that both physicians and druggists had worked earnestly for the control of the sale of habit-forming drugs. Sales in 1917 when compared with sales in 1915 show considerable decreases: cocain, 47 per cent.; opium, 34 per cent.; morphin, 45 per cent.; heroin, 29 per cent., and codein, 53 per cent. These decreases occurred despite a 40 per cent. increase in business generally. Heroin is apparently replacing codein and mor-

phin. Such abuses as occur are due to smugglers, burglars and pedlers. Abraham C. Webber, assistant district attorney, Suffolk District, Boston, was of the opinion that the supply of habit-forming drugs used by addicts comes largely from physicians and druggists who have evolved various methods of evading the law. L. L. Walton, Pennsylvania, announced that the proposed Pennsylvania narcotic law provides for the registration of addicts and the certification of each one for treatment by one specified physician. A special committee appointed to formulate and present to the National Drug Trades Conference the suggestions made during the joint conference called by it presented a report, which was adopted by the conference, in substance as follows:

The results of public and private investigations prove a great diminution in the distribution of habit-forming drugs. The supply to addicts and to the underworld is through unregistered dealers, smuggling, theft, and burglary. Further and stringent precautions should be taken against smuggling. To protect against theft and burglary, manufacturers, dealers, physicians and others having habit-forming drugs in their custody should keep their stocks in vaults or safes, to which no one should have access who is not known to be absolutely reliable.

The difficulty which the addict encounters in obtaining through lawful channels a supply of drugs to meet his imperative cravings creates a market for smuggled and stolen drugs of this kind, and leads to unlawful sales. Until the law makes provision whereby those already addicted to the use of drugs can obtain through recognized channels supplies that are adequate, for their needs, legislation can not prevent unlawful traffic.

Treatment of addicts whether public or private, should be under strict public supervision and control. Private sanatoria seem in many cases to be conducted for revenue only, and to perpetuate the drug habit. The institutions for the treatment of drug habit should be under the control and supervision of the authorities charged with the enforcement of the laws controlling the distribution of habit-forming drugs.

A law to be susceptible of effective enforcement must make possession of the tabooed drugs *prima facie* evidence of violation of the law, placing the burden of proof upon the defendant to justify such possession. State antinarcotic laws should provide for the revocation of license of physicians and pharmacists who wilfully violate them. Possession of hypodermic needles and syringes by addicts should be made unlawful. Whether addicts could or could not be safely entrusted in the course of treatment with habit-forming drugs for self-administration was not determined.

Revision of the postal regulations relating to the admission to mails of poisons, including narcotics, was recommended, and any amendment of the Harrison Narcotic Law except as suggested at the previous meeting of the National Drug Trades Conference was opposed.

## FOREIGN

**Personal.**—Dr. Charles MacDonald, who has been practicing at Guayaquil, Ecuador, since last July, has returned to his home in Salem, N. J.——Rev. Elliott H. Thomson, archdeacon of Shanghai, China, who went to that country as a missionary in 1859, and was the founder of St. Luke's Hospital, died in that city recently.

**Resolutions Against Use of Morphin in China.**—At a joint conference of the National Medical Association and the China Medical Missionary Association held recently, a resolution was adopted placing on record the conclusions of the conference that the uncontrolled use of morphin will do far more harm to China than was ever done by opium. It was stated that this imminent danger can be averted only by the Chinese government enforcing without delay the provisions of the Hague Opium Convention so as to confine the employment of morphin to legitimate medical uses.

**Death of Landouzy.**—The death of Louis Landouzy, dean of the University of Paris, aged 72, is reported by cable. THE JOURNAL mentioned recently (Feb. 3, 1917, p. 383), that the French government had awarded him the gold "epidemics" medal, for his long and ceaseless study of tuberculosis and means to reduce its ravages, and his pioneer work in social prophylaxis which has supplanted the old ideas of "public health" work. He was also mainly instrumental in the organization of special welfare work for tuberculous soldiers during the last year and a half. In bestowing this medal on him the government sought to emphasize the endemic nature of tuberculosis. He was professor of clinical medicine, with his service in the Laennec Hospital, and was one of the founders and editors of the *Revue de médecine*. A leading part in international medical gatherings was frequently imposed on him. His term "typhobacillosis" has thrown light on many puzzling cases, as also his discovery of tuberculosis in infants and the tuberculous nature of pleurisy without tubercles. His leading principle, as he strove to impress it in his classes, was that we must be "preventers of disease as well as curers of the sick."

## PARIS LETTER

PARIS, April 19, 1917.

### The War

#### A FORM OF TUBERCULOSIS COMMONLY OBSERVED IN THE ARMY

At the reunion of the physicians of the Fourth Army, Bauchant called attention to a group of symptoms believed to have a tuberculous basis occurring in a number of patients sent as doubtful to the central clearing station of the army. It concerns young subjects having, in the great majority of cases, a history of some past pulmonary trouble at the beginning of the war. On admission these patients present a condition of asthenia, and pallor of the face, with loss of weight of many pounds. The cough is constant, dry, capricious and always nocturnal. The expectoration is mucous or mucopurulent, with, rarely, streaks of blood. Tubercle bacilli are never found. A "stitch in the side" is always present. Its location is variable, being encountered both at the apex and at the base of the lung. Dyspnea is marked, occurring on slight effort, or even while lying in bed. Examination of the lung reveals signs of pleurisy. They may be located in all parts of the lung, but especially at the apex and at the base, at the site of the stitch in the side. Its presence is revealed on the surface sometimes by dry crepitation, very fine, necessitating for its discovery extremely delicate exploration. There is ordinarily no modification of the breath sounds, fremitus, or even obscuration of the respiration. More often the foci are multiple and frequently involve both lungs. The intensity of the signs varies from day to day. At first sometimes sibilant sounds are noted, but their duration is always transient. The exploration of the interscapulovertebral space shows, in young subjects almost constantly, and more rarely after the age of 30, the signs of tracheobronchial adenopathy, blowing, pectoriloquy, hollow voice and cough. At the apex of the axillary and cervical regions are found always a number of glands, hard, rolling under the finger, painless, having the size of a lentil or small pea or even larger. Roentgenologic examination furnishes inconstant results. More frequently the transparence of the lung is normal. Sometimes a part of the lung is slightly clouded. Most frequently enlarged glands are found in the region of the hilum. Fever is present in nearly all cases, which never exceeds 38 C. (100.4 F.). Most often it varies between 37.2 C. (99 F.) in the morning and 37.8 C. (100 F.) in the evening. It is not perceived by the patient. Sweating is always present. Other symptoms at times present are digestive disturbances, attacks of diarrhea, palpitation and a lowering of arterial tension, and fleeting pains in the joints and the head. There is above all an asthenia out of proportion to the general state of the patient who maintains his appetite.

The outcome of the condition is in general favorable, but after a variable time. From this point of view one can distinguish a light form in which the physical signs and the fever disappear in three weeks; a moderate form, the most common, which is prolonged for from five to ten weeks, and a more persistent form in which the symptoms may continue for two months or more. After apparent recovery a considerable rest is necessary before the patient recovers his usual strength. This form of benign tuberculosis is encountered at present with extreme frequency.

#### SYCOSIS IN THE ARMY

Spillman of Nancy, at the meeting of the physicians and surgeons of the Eighth Army, called attention to the frequency with which sycosis is observed among the troops in the field. This affection, inefficiently treated, keeps a great number of men out of service for many weeks and even several months, and with the usual forms of treatment it is difficult to avoid recurrences. Roentgenotherapy, judiciously employed, accomplishes a rapid, definite cure. This fact, under the circumstances, is of great importance. It shows the advantages of evacuating, as soon as possible, on the centers of dermatology, cases of persistent sycosis, roentgenotherapy being the therapeutic procedure most certain to return to the firing line patients whom it would be necessary, under ordinary forms of treatment, to detain for too long a time in the hospitals.

#### THE TAX ON WAR PROFITS AND PHYSICIANS

Gilbert Laurent, deputy, asked the minister of finance: 1. Does the tax on extraordinary war profits apply to the members of the liberal professions (lawyers, physicians, etc.)? 2. In case of an affirmative answer, how will these profits be established? The reply was: The law of July 1, 1916, in enumerating those subject to the extraordinary tax, names, without any restriction, the persons liable to the tax. It,

follows that the tax must apply to taxable persons exercising the liberal professions, and it is established, in that case, following general rules, to take as a base the excess profits of each period of imposition over the normal profits.

### PERSONAL HYGIENE OF THE TROOPS

The health service is preparing thirty new formations which, under the name of sections of body hygiene, will be charged with the cleanliness of the troops in the field. These formations, created on the demand of the general staff, will have charge of the sleeping tents and quarters, the showers, changes of clothing, and disinfecting apparatus. These outfits will provide for the body hygiene of 800 men per day.

## LONDON LETTER

LONDON, April 28, 1917.

### The War

#### THE TORPEDOING OF HOSPITAL SHIPS AND THE SUPPLY OF PHYSICIANS

The sinking of two hospital ships without warning by the Germans has rendered more urgent the provision of additional physicians for the army. One ship was carrying slightly wounded men of whom twenty-nine, with twelve of the crew, have been lost. The other carried 234 wounded British, 167 wounded Germans and a medical personnel of fifty-two. Of these thirteen wounded British, one member of the medical corps and fifteen wounded Germans were lost. One of the vessels bore the distinctive marks laid down by the Hague conference. In future hospital ships will bear no distinctive marks and will proceed at night without lights, as the prescribed marks only render them a better target for an enemy who respects neither the rules of warfare nor the dictates of humanity. The International Red Cross Committee at Geneva has protested to the German government against the order to sink hospital ships. The British government has decided to establish a large number of hospitals overseas in the various theaters of war for the treatment of the sick and wounded, so as to avoid as far as possible the opportunity for these outrages. To do this it has become essential to secure the services of every physician who can possibly be spared from this country. As a first step it was decided that every physician of military age should be mobilized at once. The government also expressed the hope that every physician over military age would offer his services as willing to undertake any substitution work within his capacity which would help to release a man of military age who could otherwise not be spared.

#### VENEREAL DISEASE IN THE ARMY

In moving in the House of Commons the second reading of the Venereal Diseases Bill (described in previous letters to THE JOURNAL) Mr. Hayes Fisher said that it was not a war measure but that experience showed that after a war, outbreaks of the disease were certain to occur and it was essential that no time should be lost in making provision to deal with the matter. It should not be concluded that there was any increase in the disease. For the general population there are no accurate statistics, but the deaths recorded from syphilis suggest that this disease is stationary or at all events not increasing. Before the war, statistics showed a satisfactory decline in the army and navy. At present, so far as figures can be obtained, there is nothing to show an increase. The Royal Commission on Venereal Disease reported that no less than 10 per cent. of the population in the great towns are infected with syphilis and a greater proportion with gonorrhea. Sixty-one schemes, serving a population of over 19 millions have been approved and schemes covering a population of 6 millions are being submitted for approval. The government has introduced the present bill as a complement of legislative administrative action which has already been taken. It prevents the treatment of venereal disease otherwise than by a duly qualified physician or the dispensing of any remedy except on the written prescription of such physician. So far this is the only class of disease the treatment of which by an unqualified person will be prohibited by law. In a country where regard for the liberty of the individual is carried much farther than in any other, the government had to repudiate the charge of shutting out from the field of healing every one except qualified physicians. They pleaded that this was an exceptional case and that when they provided free a remedy of a scientific character they had a right to say that people should not go to some one who would treat them inefficiently.

# Association News

## NEW YORK CLINICAL SESSIONS

(*Continued from page 1425*)

ADMISSION TICKETS to the Clinics, Demonstrations and Exhibits incorporated in the Clinical Sessions program will be issued *only* to members and guests who register and make application at the American Medical Association Headquarters.

GUESTS other than physicians and dentists will not be admitted to the medical and surgical clinics.

SPECIAL BADGES and BUTTONS will be issued to guests (other than physicians and dentists) of the Clinical Sessions and of the American Medical Association who wish to attend the demonstrations, moving pictures and exhibits or inspect the different nursing, medical, municipal and public health institutions arranged for in the program by the Committee on Preventive Medicine and Public Health and the Committees on Allied Topics, including Trained Nursing and Training Schools, District Nursing System, Hospital Social Service, and Planning and Financing of Municipal and Non-Municipal Hospitals.

FELLOWS OF THE AMERICAN MEDICAL ASSOCIATION may apply in advance by mail for tickets of admission to the Clinical Sessions. In writing for the three sessions (Monday afternoon, Tuesday morning and Tuesday afternoon) give first, second and third choice, as seating capacity of amphitheaters is limited. Tickets of admission will be delivered after registration at the American Medical Association Headquarters.

### GENERAL CLINICAL SESSIONS COMMITTEE[1]

**Wendell C. Phillips, Chairman**

**Samuel G. Gant, Sec.** — **D. Campbell, Asst. Sec.**

**Alexander Lambert** — **Floyd M. Crandall**

#### ANESTHETICS

JAMES T. GWATHMEY, Chairman — T. DRYSDALE BUCHANAN, Secretary
A. F. ERDMANN — JOSEPH E. LUMBARD
ISAAC D. KRUSKAL — CHARLES J. PICK

MONDAY MORNING, JUNE 4

BELLEVUE HOSPITAL—9. Open and closed method; ether.

BROOKLYN HOSPITAL—9. Nitrous oxid-oxygen, Dr. George Tong.

GERMAN HOSPITAL—9. Ether; chloroform anesthol; open; nitrous oxid-oxygen, ether; closed, Fischer apparatus; endotracheal.

GOUVERNEUR HOSPITAL—9. Ether; drop closed method.

HOSPITAL FOR DEFORMITIES AND JOINT DISEASES—9. Open drop; ether.

HOSPITAL FOR RUPTURED AND CRIPPLED—9. Open drop: ether; children; ethylchlorid.

LONG ISLAND COLLEGE HOSPITAL, Brooklyn—9. Collection of anesthesia charts.

METHODIST EPISCOPAL HOSPITAL, Brooklyn—9. Drop method; ether.

NEW YORK INFIRMARY FOR WOMEN AND CHILDREN—9. Demonstration, Dr. Alma Vedin.

POST-GRADUATE HOSPITAL—9. Nitrous oxid-oxygen; continuous; nitrous oxid-ether; closed, Dr. Buchanan.

PRESBYTERIAN HOSPITAL—9. General; gas-ether.

ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH—10. Endotracheal introduction of tube and efficient anesthetic and respiratory effect of endotracheal method on a dog with a wide open thorax; efficient effect endopharyngeal insufflation (Meltzer method) according to Meltzer method on a cat with open thorax; method of administering oxygen efficiently on an animal with open thorax, Dr. S. J. Meltzer.

ST. CATHERINE'S HOSPITAL, Brooklyn—9. Sequential, automatic dropping combination inhaler; nitrous oxid-oxygen, Drs. Sanders or Meeks.

ST. MARY'S FREE HOSPITAL FOR CHILDREN—9. Ether inhalation.

STATEN ISLAND HOSPITAL—11. Open-closed method: gas-ether, Dr. Louise Rosenzweig.

WOMEN'S HOSPITAL—9. Open drop: ether.

MONDAY AFTERNOON, JUNE 4

BELLEVUE HOSPITAL—2. Open and closed: ether.

BETH ISRAEL HOSPITAL—2. Oil-ether: colonic and endotracheal, Dr. S. B. Ehrlich.

BROOKLYN HOSPITAL—2. Nitrous oxid-oxygen, Dr. George Tong.

CITY HOSPITAL, Blackwell's Island—2. Open method: ether.

CUMBERLAND STREET HOSPITAL, Brooklyn—2. Endopharyngeal anesthesia; semiopen: ether, Drs. Sanders, Bomar or May Anderson.

EYE AND EAR HOSPITAL, Brooklyn—2. Exhibition apparatus, Dr. Erdmann.

1. The complete program will be available in due season, and will be mailed to those who request it, sending to the committee a stamped addressed envelope.

FORDHAM HOSPITAL—2. Open drop; ether; semiopen drop; closed-open drop; gas ether; vapor; oxygen ether, Dr. P. J. Flagg.
GERMAN HOSPITAL—See program, German Hospital, 9 a. m. Monday.
GOUVERNEUR HOSPITAL—2. Drop or closed: ether.
HARLEM HOSPITAL—2. Colonic anesthesia, oil ether; ethylchlorid-ether, open; vapor, and other methods, Dr. J. E. Lumbard.
HOSPITAL FOR DEFORMITIES AND JOINT DISEASES—2. Open drop: ether.
HOSPITAL FOR RUPTURED AND CRIPPLED—Open-drop method: ether; children started with ethylchlorid.
JEWISH HOSPITAL, Brooklyn—2. Closed: ether vapor; nitrous oxid-oxygen, Dr. I. D. Gruskal.
LONG ISLAND COLLEGE HOSPITAL, Brooklyn—2. Exhibition: anesthesia charts, Dr. Erdmann.
LYING-IN HOSPITAL—2. Open cone: ether.
MEMORIAL HOSPITAL—2. Closed ether; nitrous oxid and ether; infiltration and conduction; novocain and epinephrin, Dr. W. G. Doran.
METROPOLITAN HOSPITAL, Blackwell's Island (boat leaves foot East 70th Street, 2 o'clock)—2:30. Intravenous anesthesia, Dr. W. F. Honan.
MOUNT SINAI HOSPITAL—2. Endopharyngeal insufflation; nitrous oxid-oxygen and ether; anesthesia in major surgery; endothoracic surgery.
NEUROLOGICAL HOSPITAL—2. Etherometer; ether.
NEW YORK HOSPITAL—2. Endotracheal and other pharyngeal insufflation, Dr. Alma Vedin.
NEW YORK INFIRMARY FOR WOMEN AND CHILDREN—2. Demonstration, Dr. Alma Vedin.
PARK HOSPITAL—2. Colonic; oil-ether, Dr. H. D. Meeker.
POLYCLINIC HOSPITAL—2. Extradural or sacral; cocain combined with gas-oxygen; heated oxygenated ether vapor used in brain surgery and abodominal surgery, Dr. C. S. Hunt; extradural anesthesia, Dr. J. M. Lynch.
POST-GRADUATE HOSPITAL—2. Continuous; nitrous oxid-oxygen; closed; nitrous oxid-oxygen-ether, Dr. Buchanan.
PRESBYTERIAN HOSPITAL—2. General method: gas-ether.
ROOSEVELT HOSPITAL—2. Endotracheal and endopharyngeal insufflation anesthetometer, Dr. Booth.
SKIN AND CANCER HOSPITAL—2. Warm oxygenated ether vapor, Dr. J. T. Gwathmey; colonic anesthesia: oil-ether, Dr. E. M. Foote; local anesthesia, Dr. W. S. Bainbridge.
ST. BARTHOLOMEW'S HOSPITAL—7:30. Warm nitrous oxid and oxygen-ether vapor for adenoid and tonsil cases, Drs. Gwathmey and Palmatier.
ST. LUKE'S HOSPITAL—2. Mechanical drop ether; endotracheal; nitrous oxid-oxygen in major surgery, Dr. H. C. Luke.
ST. MARY'S FREE HOSPITAL FOR CHILDREN—Ether.
ST. VINCENT'S HOSPITAL—2. Ether, Dr. W. G. Doran.
WOMEN'S HOSPITAL—2. Open drop: ether.

TUESDAY MORNING, JUNE 5

BETH ISRAEL HOSPITAL—9. Nitrous oxid-oxygen-ether, Dr. S. B. Ehrlich.
BELLEVUE HOSPITAL—9. Open-closed: ether.
BROOKLYN HOSPITAL—9. Nitrous oxid-oxygen, Dr. George Tong.
GERMAN HOSPITAL—9. See program, German Hospital, 9 a. m. Monday.
GERMAN HOSPITAL, Brooklyn—10. Warm oxygenated ether vapor, Dr. J. T. Gwathmey.
GOUVERNEUR HOSPITAL—9. Drop or closed: ether.
HARLEM HOSPITAL—9. See program, Harlem Hospital, 2 p. m. Monday.
HOSPITAL FOR DEFORMITIES AND JOINT DISEASES—9. Open drop: ether.
HOSPITAL FOR RUPTURED AND CRIPPLED—9. Open drop: ether; children started with ethylchlorid.
JEWISH HOSPITAL, Brooklyn—9. Closed; ether vapor, nitrous oxid-oxygen, Dr. I. D. Kruskal.
LONG ISLAND COLLEGE HOSPITAL, Brooklyn—9. Exhibition: anesthesia charts.
MEMORIAL HOSPITAL—9. See program, Memorial Hospital, 2 p. m. Monday.
METHODIST EPISCOPAL HOSPITAL, Brooklyn—9. Drop method; nitrous oxid-ether-oxygen.
NEW YORK INFIRMARY FOR WOMEN AND CHILDREN—9-1. Demonstration, Dr. Alma Vedin.
POLYCLINIC HOSPITAL—9-1. Dr. C. S. Hunt; see program, Polyclinic Hospital, 2 p. m. Monday. 10. Local anesthesia, Dr. J. A. Bodine.
POST-GRADUATE HOSPITAL—9. See program, Post-Graduate Hospital, 2 p. m. Monday.
PRESBYTERIAN HOSPITAL—9. General: gas-ether.
ROOSEVELT HOSPITAL—9. Endopharyngeal inhalation, Dr. P. J. Flagg.
ST. CATHERINE'S HOSPITAL, Brooklyn—9. See program, St. Catherine's Hospital, 9 a. m. Monday.
ST. GILES HOSPITAL—8. Ether with nitrous oxid and oxygen: closed, Dr. Erdmann.
ST. LUKE'S HOSPITAL—9. Mechanical drop: ether; endotracheal; nitrous oxid-oxygen in major surgery.
ST. MARY'S FREE HOSPITAL FOR CHILDREN—9. Ether inhalation.
ST. PETER'S HOSPITAL, Brooklyn—8:30. Ether; Allis inhaler.

TUESDAY AFTERNOON, JUNE 5

HOSPITAL FOR RUPTURED AND CRIPPLED—9. Open drop: ether; children started with ethylchlorid.
ROOSEVELT HOSPITAL—9. Endopharyngeal inhalation, Dr. P. J. Flagg.
ST. CATHERINE'S HOSPITAL, Brooklyn—9. See program, St. Catherine's Hospital, 9 a. m. Monday.
ST. GILES HOSPITAL—8. Ether with nitrous oxid and oxygen; closed, Dr. Erdmann.
ST. LUKE'S HOSPITAL—9. Mechanical drop: ether; endotracheal; nitrous oxid-oxygen in major surgery.
ST. MARY'S FREE HOSPITAL FOR CHILDREN—9. Ether inhalation.
ST. PETER'S HOSPITAL, Brooklyn—8:30. Ether; Allis inhaler.

TUESDAY AFTERNOON, JUNE 5

BELLEVUE HOSPITAL—2. Open and closed: ether.
BROOKLYN HOSPITAL—2. Nitrous oxid-oxygen, Dr. George Tong.
CUMBERLAND STREET HOSPITAL, Brooklyn—2. See program, Cumberland Street Hospital, 2 p. m. Monday.
EYE AND EAR HOSPITAL, Brooklyn—2. Exhibition apparatus, Dr. Erdmann.
FORDHAM HOSPITAL—2. See program, Fordham Hospital, 2 p. m. Monday.
GERMAN HOSPITAL—2. See program, German Hospital, 9 a. m. Monday.
GOUVERNEUR HOSPITAL—2. Drop or closed: ether.
HARLEM HOSPITAL—2. See program, Harlem Hospital, 2 p. m. Monday.
HOSPITAL FOR DEFORMITIES AND JOINT DISEASES—2. Open drop: ether.
HOSPITAL FOR RUPTURED AND CRIPPLED—2. Open drop: ether; children, ethylchlorid.
JEWISH HOSPITAL, Brooklyn—2. Closed method: ether vapor; nitrous oxid-oxygen, Dr. I. D. Kruskal.
LONG ISLAND COLLEGE HOSPITAL, Brooklyn—2. Exhibition: anesthesia charts.
LYING-IN HOSPITAL—2. Open cone; ether.
MEMORIAL HOSPITAL—2. See program, Memorial Hospital, 2 p. m. Monday.
METHODIST EPISCOPAL HOSPITAL, Brooklyn—2. Drop method: ether.
METROPOLITAN HOSPITAL, Blackwell's Island—2:30. See program, Metropolitan Hospital, 2:30 p. m. Monday.
MOUNT SINAI HOSPITAL—2. Endopharyngeal insufflation; nitrous oxid-oxygen and ether; anesthesia in major surgery; endothoracic surgery; device for artificial respiration; endopharyngeal anesthesia, Dr. W. Branower; endotracheal anesthesia, Dr. Charles A. Elsberg.
NEW YORK CITY CHILDREN'S HOSPITAL AND SCHOOLS, Randall's Island (boat from foot East 125th Street)—2. Spinal anesthesia, Dr. William Seaman Bainbridge; ethylchlorid, warmed oxygenated ether vapor, Drs. Munkittrick and Gwathmey.
NEW YORK HOSPITAL—2. Gas-oxygen, Dr. Alma Vedin.
POST-GRADUATE HOSPITAL—2. Continuous: nitrous oxid-oxygen; closed: nitrous oxid-oxygen-ether, Dr. Buchanan; nitrous oxid-oxygen-ether, Dr. R. C. Coburn; oil-ether colonic, Dr. B. Douglass; spinal analgesia, Dr. D. W. Furniss.
PRESBYTERIAN HOSPITAL—2. General; gas-ether.
ROOSEVELT HOSPITAL—2. Endotracheal and endopharyngeal insufflation anesthetometer, Dr. Booth.
ST. BARTHOLOMEW'S HOSPITAL—7:30. Warmed nitrous oxid and oxygen-ether vapor for adenoids and tonsils, Drs. J. T. Gwathmey and Palmatier.
ST. LUKE'S HOSPITAL—2. Mechanical drop ether; endotracheal; nitrous oxid-oxygen in major surgery, Dr. H. C. Luke.
ST. MARK'S HOSPITAL—2. Nitrous oxid-oxygen-ether sequence, Dr. S. B. Ehrlich.
ST. VINCENT'S HOSPITAL—2. Ether, Dr. W. G. Doran.
ST. MARY'S FREE HOSPITAL FOR CHILDREN—2. Ether inhalation.
SKENE'S SANITARIUM, Brooklyn—2:30. Ether; Allis inhaler.
STATEN ISLAND HOSPITAL—2. Gas-ether; open; closed, Dr. Louise Rosenzweig.
WOMEN'S HOSPITAL—2. Open drop: ether.

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## ORTHOPEDIC SURGERY

VIRGIL P. GIBNEY, Chairman — T. HALSTED MYERS
FRED H. ALBEE — ARTHUR H. CILLEY, Secretary
HENRY W. FRAUENTHAL — P. WILLIAM NATHAN
RUSSELL A. HIBBS — REGINALD H. SAYRE
WALTER TRUSLOW

MONDAY MORNING, JUNE 4

BELLEVUE HOSPITAL, Outdoor Department—10. After-care infantile paralysis; demonstration electricity and exercises, Drs. Reginald H. Sayre, F. J. Wettervik.
BETH ISRAEL HOSPITAL—9. After-care infantile paralysis; ambulatory orthopedics, Drs. William Frieder, Edgar Oppenheimer, Isadore Leavy.
GERMAN HOSPITAL—10. Demonstration Zander apparatus, Dr. Jacob Heckman.
VANDERBILT CLINIC—10. After-care infantile paralysis; ambulatory orthopedics, Drs. Charles H. Jaeger, chief; Samuel Boorstein, Harry D. Sonnenschein.

MONDAY AFTERNOON, JUNE 4

BELLEVUE HOSPITAL, Ward 40—2. Hospital after-care infantile paralysis; use of electric baking and massage, Dr. Reginald H. Sayre.
BROOKLYN HOSPITAL—3. After-care infantile paralysis; ambulatory orthopedics, Drs. Walter Truslow, chief; E. F. Wolfert, G. H. A. Hunter.
CORNELL UNIVERSITY MEDICAL COLLEGE—1. After-care infantile paralysis; ambulatory orthopedics, Drs. Arthur Gilley, chief; N. P. Breed.
ENGINEERING SOCIETIES' BUILDING, 29 West 39th Street, Auditorium—5. Motion picture exhibition, bone graft (inlay); replacing portion of humerus, Dr. Fred H. Albee.
HOSPITAL FOR DEFORMITIES AND JOINT DISEASES (Dispensary)—2. Obliterating endarteritis, Dr. Henry W. Frauenthal, surgeon-in-chief; late operations for infantile paralysis, Dr. Herman C. Frauenthal; focal infections, Dr. Harry Finkelstein; syphilitic joints, Roentgen ray, Dr. Joseph Roth; gonorrheal joint disease, male, Dr. Max Strunsky; gonorrheal joint disease, female, Dr. John C. Bradner; orthopedic operations, operating room, Dr. Henry W. Frauenthal.

HOSPITAL FOR RUPTURED AND CRIPPLED—1. After-care infantile paralysis; ambulatory orthopedics; postoperative cases; corrective gymnastics, Miss Calderwood. 2. Fractures of the neck of the femur in children, Dr. H. L. Taylor; teeth as an indication of bone disease, Dr. F. W. Roberts; treatment of fractures, new methods, Dr. G. W. Hawley; hemorrhagic osteomyelitis, Dr. George Barrie. 3. Bone dystrophies, Dr. W. W. Strang; quiet hip disease, Dr. William Frieder.

JAMAICA HOSPITAL—2. After-care infantile paralysis, Dr. Henry C. Courten.

LEBANON HOSPITAL—2. After-care infantile paralysis; ambulatory orthopedics, Drs. Samuel Kleinberg, chief; M. Cohn, M. Kaiden; tuberculin in bone and joint tuberculosis, Dr. J. Braun.

MOUNT SINAI HOSPITAL DISPENSARY—1. After-care infantile paralysis; ambulatory orthopedics, Drs. E. Oppenheimer, Sigmund Epstein.

NEW YORK CITY CHILDREN'S HOSPITAL AND SCHOOLS, Randall's Island (East 125th Street ferry half hourly)—2. Clinic. Dr. Benjamin F. Riley.

ORTHOPEDIC DISPENSARY AND HOSPITAL—2. After-care infantile paralysis; ambulatory orthopedics, Drs. Russell A. Hibbs, surgeon-in-chief; Benjamin P. Farrell, assistant surgeon-in-chief; R. E. Humphries, chief of clinic; E. W. Lawrance, Nathaniel Mills, R. S. Farr.

POST-GRADUATE HOSPITAL—4:30. Ambulatory orthopedics; after-care infantile paralysis, Drs. Henry Ling Taylor, P. W. Roberts, William Frieder.

UNIVERSITY AND BELLEVUE MEDICAL COLLEGE CLINIC—3. After-care infantile paralysis; ambulatory orthopedics, Drs. Reginald Sayre, F. J. Wettervik.

TUESDAY MORNING, JUNE 5

BELLEVUE HOSPITAL, Outdoor Department—10. After-care infantile paralysis, Drs. Reginald H. Sayre, F. J. Wettervik.

BETH ISRAEL HOSPITAL—9. After-care infantile paralysis; ambulatory orthopedics, Drs. William Frieder, Henry Finkelstein.

FORDHAM HOSPITAL—10. Hemiplegics; cases showing beneficial effects of early evacuation of the clot; case showing restoration of function in a resected nerve with considerable loss of nerve tissue; Erb's palsy; postoperative cases; case complete recovery following removal of enlarged transverse process of fifth lumbar vertebra, Drs. Alfred S. Taylor, Samuel W. Boorstein; general after-care infantile paralysis; postoperative cases; old cases infantile paralysis; chondroma following trauma, Drs. Samuel W. Boorstein, S. Brody.

GERMAN HOSPITAL—9. Demonstration of Zander apparatus, Drs. Charles H. Jaeger, Charles H. Sanford.

HOSPITAL FOR RUPTURED AND CRIPPLED—8:30. Operations, Dr. Virgil P. Gibney, surgeon-in-chief. 9:30. Operations. Dr. Royal Whitman. 10:30. Operations, Dr. Henry Ling Taylor.

LONG ISLAND COLLEGE HOSPITAL, Brooklyn (Polhemus Dispensary)—10. After-care infantile paralysis; ambulatory orthopedics, Drs. Jacques C. Rushmore, S. L. Fisher, H. C. Fett, H. G. Durham.

ORTHOPEDIC DISPENSARY AND HOSPITAL—8. Operations, Drs. Russell A. Hibbs, surgeon-in-chief; B. P. Farrell, assistant surgeon-in-chief; Robert E. Humphries, Herbert A. Durham.

SEA SIDE HOSPITAL, Coney Island—10. After-care infantile paralysis, 100 ward cases, Drs. Walter Truslow, E. B. Ebright.

VANDERBILT CLINIC—10. After-care infantile paralysis; ambulatory orthopedics, Drs. Charles H. Jaeger, chief; William Frieder.

TUESDAY AFTERNOON, JUNE 5

BELLEVUE HOSPITAL, Ward 40—2. Hospital after-care; demonstration baking and massage, Dr. Reginald H. Sayre; Wards I-7, K-7, cyst of femoral neck; adult and adolescent rickets; slipping of upper epiphysis of femur, Dr. Reginald H. Sayre; round cell sarcoma of head of tibia treated by enucleation and radium, Dr. Joseph B. Bissell.

CORNELL UNIVERSITY MEDICAL COLLEGE—1. After-care infantile paralysis; ambulatory orthopedics, Dr. John S. Ware.

GERMAN EAST SIDE POLYCLINIC—1:30. After-care infantile paralysis; ambulatory orthopedics; postoperative cases, Dr. Dexter D. Ashley.

HOSPITAL FOR RUPTURED AND CRIPPLED—1. After-care infantile paralysis; treatment of scoliosis (*a*) by corrective gymnastics, Miss Calderwood; (*b*) by plaster-of-Paris jackets and braces, Dr. S. Kleinberg; photographic and Roentgen-ray demonstration of orthopedic conditions, Mr. Percy R. Ashley; treatment of congenital clubfoot in babies, and general plaster-of-Paris work, Dr. William L. Sneed; result of operation for deformities following poliomyelitis, Dr. Royal Whitman. 2:30. Fracture of neck of femur, Whitman's abduction method, Dr. B. H. Whitbeck; treatment of injury to tibial tubercle (Osgood-Schlatter's disease), Dr. Richmond Stevens. 2:30. Joint manifestations due to tonsillar affections; operations, Dr. James J. King.

LEBANON HOSPITAL—2. After-care infantile paralysis; ambulatory orthopedics, Dr. Jacob Grossman.

LONG ISLAND COLLEGE HOSPITAL, Brooklyn (Polhemus Dispensary—12:30. Operations, Dr. Jacques C. Rushmore.

MONTEFIORE HOME AND HOSPITAL—2. Chronic multiple arthritis; cases; peculiar types chronic bone disease; cases, Dr. George R. Elliott; neurologic conditions associated with polyarthritis, Drs. I. Strauss, P. William Nathan; pathology and treatment, polyarthritis, Dr. P. William Nathan; tuberculous arthritis treated by heliotherapy; neglected hemiplegics treated by orthopedics, Dr. S. W. Boorstein.

MOUNT SINAI DISPENSARY—1. After-care infantile paralysis; ambulatory orthopedics, Drs. P. William Nathan, William Frieder, Isadore Leavy.

NEW YORK AMERICAN BABY HOSPITAL, Brooklyn—2. After-care infantile paralysis; cases; operative clinic, Dr. Louis C. Ager.

ORTHOPEDIC DISPENSARY AND HOSPITAL—2. After-care infantile paralysis; ambulatory orthopedics; postoperative cases, Drs. Russell A. Hibbs, surgeon-in-chief; B. P. Farrell, assistant surgeon-in-chief; H. J. Bogardus, visiting surgeon; H. A. Durham, chief of clinic; Reginald Burbank, Frederick Williams, C. H. Saford.

POST-GRADUATE HOSPITAL—4: 30. Bone operations, Dr. F. H. Albee.

ST. LUKE'S HOSPITAL—2: 30. After-care infantile paralysis; ambulatory orthopedics; operations, Dr. T. Halsted Myers.

UNIVERSITY OF BELLEVUE MEDICAL COLLEGE (Hyde operating room)—3. Torticollis operation, Dr. Reginald H. Sayre; after-care infantile paralysis; ambulatory orthopedics, Drs. Reginald H. Sayre, J. J. Nutt.

*(To be continued next week)*

## Marriages

HAROLD FRANK TIDWELL, M.D., West New York, N. J., to Miss Kathleen Galloway of New York, April 11.

JOHN ADOLPH FORST, M.D., Elmhurst, N. Y., to Miss Frances May Nicholson of Flushing, N. Y., April 30.

FREDERICK WALKER ST. CLAIR, M.D., to Miss Loretta Louise Grant, both of Indiana, Pa., March 31.

JOHN EDWARD GILLESPIE BEARDSLEY, M.D., to Miss Minerva Post, both of Philadelphia, April 30.

P. A. SURG. MARTIN DONELSON, U. S. Navy, to Miss Virginia Dance of Danville, Va., April 25.

EDWARD H. MOSS, M.D., Cincinnati, to Miss Mabel Willis of Bellevue, Ky., April 30.

JOHN B. FRICK, M.D., to Miss Ardis M. Tanquay, both of Philadelphia, May 3.

## Deaths

**Marden Babin, M.D.,** Centerville, Mich.; Western Reserve University, Cleveland, 1867; aged 77; a Fellow of the American Medical Association, and president of the St. Joseph County Medical Society in 1910; once president of the village of Centerville and for twenty years president of the village board of education; a member of the state senate in 1891 and 1893, a veteran of the Civil War; died at the home of his son in Battle Creek, Mich., April 10.

**William Watt Kerr, M.D.,** San Francisco; University of Edinburgh, Scotland, 1881; aged 59; a Fellow of the American Medical Association; professor of clinical medicine in the University of California, San Francisco; visiting physician to the San Francisco City and County Hospital and the Children's Hospital; consulting physician to St. Luke's Hospital and the San Francisco Lying-In Hospital; died at his home, April 26, from heart disease.

**Herman Craft, M.D.,** Stone Ridge, N. Y.; New York University, New York, 1859; aged 80; a member of the Medical Society of the State of New York; assistant surgeon of the One Hundred and Forty-Third New York Volunteer Infantry, and later in the regular establishment during the Civil War; a member of the state assembly in 1886, and from 1887 to 1895, township supervisor; died at his home, April 21.

**John Theodore DeMund, M.D.,** Ridgewood, N. J.; University of Pennsylvania, Philadelphia, 1864; aged 77; formerly a Fellow of the American Medical Association; a member of the Medical Society of New Jersey; twice coroner of Bergen County; surgeon of the Fifty-Ninth Pennsylvania Volunteer Infantry during the Civil War; died at his home, April 30.

**William Thomas Adams, M.D.,** Elgin, Minn.; Rush Medical College, 1874; aged 67; a Fellow of the American Medical Association; secretary of the Southern Minnesota Medical Society, since its foundation; one of the best known general practitioners of Southern Minnesota; died at his home, April 25, from chronic interstitial nephritis.

**Edwin Bradbury Lyon, M.D.,** West Hartford, Conn.; Berkshire Medical College, Pittsfield, Mass., 1862; aged 86; a member of the Connecticut State Medical Society; demonstrator of anatomy and prosector in surgery in his alma mater; surgeon of U. S. Volunteers during the Civil War; died at his home, April 12.

**John J. Williams, M.D.,** Wayne, Neb.; State University of Iowa, Iowa City, 1880; aged 66; formerly a Fellow of the American Medical Association; a member of the Nebraska State Medical Association; at one time a member of the state legislature; died suddenly at his home, April 25, from heart disease.

**Martin Piper Judkins, M.D.,** Rockland, Me.; Medical School of Maine, Brunswick, 1884; aged 63; a member of the Maine Medical Association; for twelve years coroner of Knox County and at one time a member of the Rockland Board of Health; died in a sanatorium at Wells, Me., April 26.

**Matthew Charles O'Connor, M.D.,** New Haven, Conn.; College of Physicians and Surgeons in the City of New York, 1873; aged 68; a Fellow of the American Medical Association; one of the incorporators of the Knights of Columbus; died at his home, April 30, from cerebral hemorrhage.

**Charles E. Simmons, M.D.,** New York; College of Physicians and Surgeons in the City of New York, 1864; aged 77; a member of the Medical Society of the State of New York and the New York Academy of Medicine; for ten years commissioner of charities of New York; died at his home, May 3.

**Freeborn Stanton Lewis, M.D.,** Port Angeles, Wash.; Detroit Medical College, 1874; aged 68; a member of the Washington State Medical Association; postmaster of Port Angeles and for three terms mayor of the city; died at his home, April 8, from cerebral hemorrhage.

**Owen E. Metzger, M.D.,** South Whitley, Ind.; University of Michigan, Ann Arbor, 1908; aged 35; a Fellow of the American Medical Association; died in the Lutheran Hospital, Fort Wayne, Ind., March 11, four days after an operation for appendicitis.

**Joseph D. Alderson, M.D.,** Meadow View, Va.; Kentucky School of Medicine, Louisville, 1876; aged 74; formerly a Fellow of the American Medical Association; a member of the Medical Society of Virginia; died at his home, March 30, from myocarditis.

**Thomas Stanley Hodge,** Torrington, Conn. (license, Connecticut, 1893); aged 69; formerly president of the Connecticut Eclectic Medical Association; secretary of the Connecticut Eclectic Medical Examining Board; died at his home, April 20.

**James W. McClanahan, M.D.,** Forest City, Mo.; Ensworth Medical College, St. Joseph, Mo., 1889; aged 66; a member of the Missouri State Medical Association; died in Ensworth Hospital, St. Joseph, Mo., February 17, from carcinoma of the stomach.

**William Gunton Budington, M.D.,** New York City; College of Physicians and Surgeons in the City of New York, 1872; aged 71; who retired from practice in 1881; died in his apartments in New York City, April 15, from chronic bronchitis.

**Ida B. Parker, M.D.,** Orange, Calif.; University of Southern California, Los Angeles, 1895; aged 47; formerly a Fellow of the American Medical Association and president of the Orange County Medical Society in 1913; died at her home, April 15.

**James Alfred Andrews, M.D.,** Kearney, Neb.; Rush Medical College, 1893; aged 57; formerly a Fellow of the American Medical Association; a member of the Nebraska Legislature, in 1901; died in Green Gables Sanitarium, Lincoln, Neb., April 28.

**Sum S. Linder, M.D.,** Union, S.C.; Medical College of the State of South Carolina, Charleston, 1876; aged 62; for many years a practitioner and scientific dairyman of Union County, S. C.; died in his office, in Union, March 31, from acute gastritis.

**Rae Felt, M.D.,** Eureka, Calif.; University of California, San Francisco, 1890; aged 47; a Fellow of the American Medical Association; died in St. Francis Hospital, San Francisco, April 18, from complications following gallstones.

**George Roger Smith, M.D.,** Bloomington, Ill.; Northwestern University Medical School, Chicago, 1887; aged 57; formerly a Fellow of the American Medical Association; a member of the Illinois State Medical Society; died at his home, April 21.

**Powhatan Clarke, M.D.,** Douglaston, N. Y.; New York University, New York City, 1858; aged 81; for thirty-eight years professor of chemistry in Baltimore Medical College; died at the home of his daughter in Douglaston, April 25.

**John N. Mallory,** Emily, Minn. (license Minnesota, exemption certificate, 1883); aged 65; formerly a member of the Minnesota State Medical Association; a practitioner since 1874; died in a hospital in Brainerd, Minn., April 17.

**James A. Bigelow, M.D.,** Elkhart, Ind.; Yale University, New Haven, Conn., 1861; aged 79; surgeon of the Eighth and Eleventh Connecticut Volunteer Infantry, during the Civil War; died at his home, April 1, from pneumonia.

**William Sanford Kingsbury, M.D.,** Clastonbury, Conn.; Yale University, New Haven, 1896; aged 49; a Fellow of the American Medical Association; a specialist in obstetrics; died at his home, April 9, from angina pectoris.

**Michael J. Coholan, M.D.,** New Britain, Conn.; New York University, New York City, 1865; aged 72; a member of the Connecticut State Medical Society; died in Mercy Hospital, Springfield, Mass., April 14, from pneumonia.

**Sylvester Byron Davis, M.D.,** Hollywood, Calif.; University of Michigan, Ann Arbor, 1875; aged 68; a member of the Medical Society of the State of California; died at his home, February 20, from chronic myocarditis.

**John Dennis Tierney, M.D.,** Ridgewood, Long Island, N. Y.; Cornell University, New York City, 1911; aged 29; associate physician of St. Mary's Hospital, Jamaica, L. I.; died in that institution, April 17, from pneumonia.

**Robert Bailey, M.D.,** Cleveland; Western Reserve University, Cleveland, 1870; aged 68; a member of the Ohio State Medical Association; and a member of the staff of St. Clair Hospital; died at his home, April 20.

**John F. Cochran, M.D.,** Port Myers, Fla.; Memphis Medical College, Memphis, Tenn., 1871; aged 72; formerly a member of the Tennessee State Medical Association; died at his home, February 15, from anemia.

**Rezin Warfield Hall, M.D.,** Moundsville, W. Va.; University of Maryland, Baltimore, 1874; aged 72; a Fellow of the American Medical Association; a veteran of the Civil War; died at his home, April 22.

**John W. Harvey, M.D.,** Chico, Calif.; California Medical College, San Francisco, 1887; formerly a member of the Medical Society of the State of California; died in San Francisco, May 2.

**George Henry Codding, M.D.,** Amenia, N.Y.; College of Physicians and Surgeons in the City of New York, 1881; aged 62; died in Dover Plains, N. Y., March 6, from arteriosclerosis.

**Augustus Bosworth Stone, M.D.,** Linden, Ala.; University of Alabama, Mobile, 1886; aged 67; a member of the Medical Association of the State of Alabama; died at his home, April 4.

**Joseph S. Lehman, M.D.,** Clarence Center, N. Y.; Unversity of Buffalo, N. Y., 1893; aged 70; a Fellow of the American Medical Association; died at his home, March 14, from pneumonia.

**Joseph Spratt Dodds, M.D.,** Pittsburgh; Jefferson Medical College, 1875; aged 70; a specialist in proctology; died at the home of his daughter, in Pittsburgh, April 18, from pneumonia.

**Joseph Wallace Haverfield, M.D.,** Uhrichsville, Ohio; Starling Medical College, Columbus, Ohio, 1878; aged 64; died in his office, February 12, from organic heart disease.

**John Marlin Habel, M.D.,** Onancock, Va.; Homeopathic Medical College of Pennsylvania, Philadelphia, 1867; aged 91; died at the home of his nephew in Onancock, April 15.

**Thomas Morris, M.D.,** Mount Zion, Ind.; Medical College of Fort Wayne, Ind., 1883; aged 68; a member of the Indiana State Medical Association; died at his home, April 17.

**Thomas John Lally, M.D.,** Waterbury, Conn.; Albany, N.Y., Medical College, 1899; aged 41; a Fellow of the American Medical Association; died at his home, April 19.

**Anson A. DePuy, M.D.,** Fruitvale, Calif.; University of California, San Francisco, 1881; aged 70; died in Providence Hospital, Oakland, Calif., April 8.

**Joseph Moorhead Taylor, M.D.,** Altoona, Pa.; College of Physicians and Surgeons, Baltimore, 1885; died at his home, January 17, from heart disease.

**John W. Morris, M.D.,** Wheeling, W. Va.; Pulte Medical College, Cincinnati, 1876; aged 64; died at his home, March 4, from cerebral hemorrhage.

**Alfred Ernest Arthur McCann, M.D.,** Lowell, Mass.; McGill University, Montreal, 1892; aged 48; died in St. John's Hospital, Lowell, April 12.

**William W. Yandell, M.D.,** Bedford, Ind.; University of Louisville, Ky., 1848; aged 88; died at his home, January 7, from cerebral hemorrhage.

**W. T. Sutton,** Ashbyburg, Ky.; (license, Kentucky, thirty-one years practice, 1894); aged 80; died at the home of his son in Ashbyburg, April 8.

**James Rufus Pou, M.D.,** Uniontown, Ala.; Medical College of the State of South Carolina, Charleston, 1854; aged 84; died at his home, April 13.

**William John Neill, M.D.,** Chicago; Rush Medical College, 1880; aged 66; an ophthalmologist; died at his home, April 18, from arteriosclerosis.

**J. J. Moore, M.D.,** Trenton, Mo.; St. Louis Medical College, 1868; aged 71; died at Excelsior Springs, Mo., February 4, from pneumonia.

**George E. Alexander, M.D.,** Hayward, Calif.; Jefferson Medical College, 1873; aged 69; died at his home, recently.

# The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

[CONTRIBUTION FROM THE CHEMICAL LABORATORY OF THE AMERICAN MEDICAL ASSOCIATION]

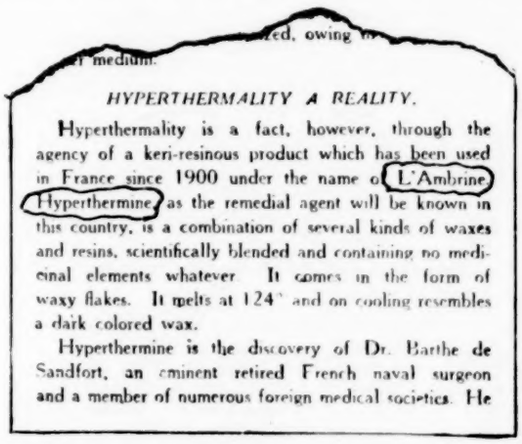
## "AMBRINE" AND PARAFFIN FILMS*

Paul Nicholas Leech, Ph.D.

In the last year or so, the hot-wax or paraffin treatment of burns has been widely discussed both in medical and lay periodicals. Although the treatment is simply a modification of the well-known use of oil and ointments, it has received unusual attention, owing to the widespread sensationalism following the exploitation in France of a secret and therefore mysterious mixture, "Ambrine," the formula of Dr. Barthe de Sandfort. Owing to this publicity, it seemed desirable, to investigate the chemical composition, and to compare its physical properties with other waxlike substances.

"Ambrine" is promoted as a dressing for burns, frostbites, neuritis, varicose ulcers, phlebitis, neuralgia, rheumatism, sciatica, gout, etc. It is a smoky-appearing substance, resembling paraffin in consistency and without odor. For application, Ambrine is melted and applied to the wound either with a brush or with a specially devised atomizer. It cools quickly, and leaves a solid, protecting film.

It is said that de Sandfort "stumbled on this treatment by accident."[1] Being a sufferer of rheumatism, he had been benefited by hot mud baths; on returning home he sought a substitute, and finally made a mixture of paraffin, oil of amber and amber resin. This was applied hot, serving as a firm poultice. "Years later, he went on service to a railway in China and was in Yunnan at the time of the incendiary insurrection, and many badly burned Chinese were brought



...ized, owing ...
...r medium.

*HYPERTHERMALITY A REALITY.*

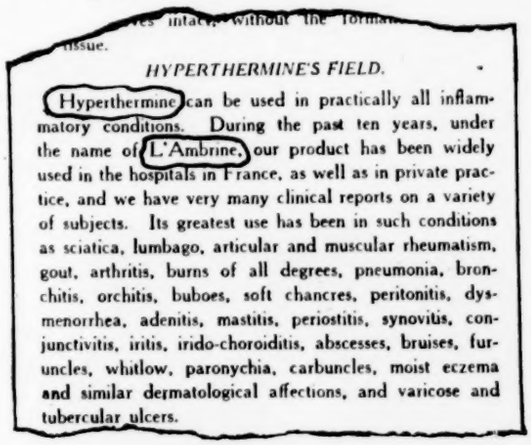
Hyperthermality is a fact, however, through the agency of a keri-resinous product which has been used in France since 1900 under the name of L'Ambrine. Hyperthermine, as the remedial agent will be known in this country, is a combination of several kinds of waxes and resins, scientifically blended and containing no medicinal elements whatever. It comes in the form of waxy flakes. It melts at 124° and on cooling resembles a dark colored wax.

Hyperthermine is the discovery of Dr. Barthe de Sandfort, an eminent retired French naval surgeon and a member of numerous foreign medical societies. He

"Ambrine" has been exploited in the United States for some time. To physicians it was sold under the name "Hyperthermine." Above is a photographic reproduction (reduced) of a portion of a booklet describing "Hyperthermine," which has been in THE JOURNAL office for some years.

in for treatment. Remembering that Ambroise Paré treated such cases with hot oil, he tried the effect of covering the burn with his melted ambrine which at once glazes over, forming a coat impervious to the air, and his patients ceased to suffer."[2]

"Ambrine" has been sold in America under two names: "Hyperthermine," as exploited to physicians, and "Thermozine," as advertised to the public. Physical comparison alone shows that Ambrine as now sold differs from "Hyperthermine" of a few years ago; the probable reason is that "Ambrine" has changed its formula. This is borne out by Matas,[3] who states that de Sandfort "admitted that Ambrine was a compound of paraffin, oil of sesame and resins, but was not at liberty to divulge its exact composition, as the formula and manufacture of this substance was now the property of a private corporation which was exploiting it as a proprietary and secret remedy." The later formula differs from the original.



...ves intact, without the formation ...
...tissue.

*HYPERTHERMINE'S FIELD.*

Hyperthermine can be used in practically all inflammatory conditions. During the past ten years, under the name of L'Ambrine, our product has been widely used in the hospitals in France, as well as in private practice, and we have very many clinical reports on a variety of subjects. Its greatest use has been in such conditions as sciatica, lumbago, articular and muscular rheumatism, gout, arthritis, burns of all degrees, pneumonia, bronchitis, orchitis, buboes, soft chancres, peritonitis, dysmenorrhea, adenitis, mastitis, periostitis, synovitis, conjunctivitis, iritis, irido-choroiditis, abscesses, bruises, furuncles, whitlow, paronychia, carbuncles, moist eczema and similar dermatological affections, and varicose and tubercular ulcers.

Photographic reproduction (reduced) from the "Hyperthermine" ("Ambrine") booklet recommending it for use in rheumatism, gout, pneumonia, buboes, dysmenorrhea, eczema, tuberculous ulcers, etc.

Besides the foregoing paraffin preparations, two others have recently been placed on the American market, "Parresine" (nonsecret) and "Mulene" (secret).

### ANALYSIS OF AMBRINE

"Ambrine" comes in rectangular cakes, about 1½ inches wide, 6 inches long and ½ inch thick. It is moderately soft, but somewhat brittle at ordinary room temperature. A black substance is present which evidently settles out during the compounding, as in one side of the cake these particles can be clearly discerned by holding it up to the light; in the other side there are no suspended particles. When melted, the solution is not clear, and a sediment forms. The melting point (U. S. P. method; see later) is 48.4 C. The plasticity and ductility[4] are 27 and 30.5, respectively. It is pliable and strong at body temperature. The saponification number and acid number are both very low, but a fatty oil is present. Tests indicated oil of sesame. Ninety-eight per cent. of "Ambrine" is soluble in ether; this soluble portion may be treated with low-boiling ligroin (petroleum ether), out of which, on standing, a black asphalt-like substance separates. Of the ether-insoluble substance, 65 per cent. is soluble in chloroform. The remaining insoluble substance contains a small amount of silica and vegetable fiber. The paraffin obtained from "Ambrine" melted at 48.6 C. As a result of various experiments, it appears that the composition of "Ambrine" is essentially as follows:

| | |
|---|---|
| Paraffin (M. P. 48.6 C.) | 97.0 per cent. |
| Fatty oil (sesame?) | 1.5 per cent. |
| Asphalt-like body | 0.5 per cent. |
| Coloring matter, and undetermined | 1.0 per cent. |
| | 100.0 |

### OTHER PROPRIETARY PARAFFIN FILMS

A cursory examination of "Mulene," manufactured by the Mulene Company, Pittsburgh, was also made. This appears to contain paraffin, beeswax, a fat-soluble red dye and considerable rosin. When heated carefully in a beaker, the rosin "sticks" to the bottom, and does not go into solution readily.[5]

* A number of physicians are testing out various paraffin films clinically. Their reports will appear in THE JOURNAL in the near future. —ED.

1. The Outlook, Jan. 17, 1917, p. 100.
2. Med. Rec., New York, Jan. 27, 1917, p. 160.
3. Matas, Rudolph: Burns Treated with Paraffin Mixtures, New Orleans Med. and Surg. Jour., April, 1917, p. 681.
4. These determinations will be described later.
5. When the sample was first obtained, this feature was not observed.

"Parresine,"[6] according to the manufacturers, is a mixture composed of paraffin, 94 to 96 per cent.; gum elemi, 0.20 to 0.25 per cent.; Japan wax, 0.40 to 0.50 per cent.; asphalt, 0.20 to 0.25 per cent., and eucalyptol, 2 per cent., the whole being colored with alkannin and gentian violet.[7]

### FORMULA FOR A PARAFFIN FILM

In a recent article, Sollmann[8] presented various suggestions for the compounding of paraffin films. Some of the formulas were promising and others were not, but all were simple. He did not try to imitate "Ambrine." Lieut.-Col. A. J. Hull[9] of the Royal Army Medical Corps, after experimenting with different combinations, concluded that a mixture of "1 part resorcin, 2 parts eucalyptus oil, 5 parts olive oil, 25 parts soft paraffin [petrolatum][10] and 67 parts hard paraffin" served the purpose as well as "Ambrine." The following formula, which might be called Asphalt-Paraffin No. 21, much more closely

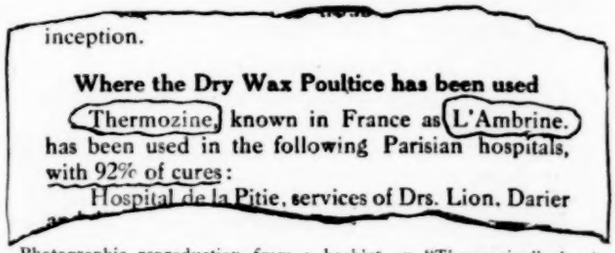
SMITH'S MAGAZINE ADVERTISER
Thermozine
MEDICATED WAX APPLICATION.
A FRENCH DISCOVERY. ABSOLUTELY SANITARY.
Used for ten years in the French Army and Navy.
A new discovery with almost miraculous powers for drawing out poison and healing inflamed and suppurating sores of the skin.
Makes an airtight antiseptic cover for a burnt surface and heals quicker than any other method.
Retaining heat for many hours makes it ideal for Pleurisy, Severe Burns, Boils, Carbuncles, Ringworms, Rheumatism, Neuralgia, Sprains, Aching Muscles, Eczemas, yield almost instantly to this wonderful application.
Produces healing in one-half the time of other remedies.
It is a clean application and does not stick nor soil the clothing. Easily applied—simply heated and put on with a brush.
Many recent testimonials on file open for inspection.
Outfit, consisting of a can of Thermozine, with proper accessories, prepaid . . $1.00
SOLD ONLY BY THE MANUFACTURERS
PASTEUR CHEMICAL CO., 98 Beekman Street, N. Y. City
Please mention this magazine when answering advertisements.

Photographic reproduction (greatly reduced) of a full page magazine advertisement of "Thermozine," the name under which "Ambrine" was sold to the public.

resembles "Ambrine," and it seems to have certain advantages, due to the use of a more suitable grade of paraffin:

| | |
|---|---|
| Paraffin[11] (M. P. by U. S. P. method 47.2 C.) | 97.5 gm. |
| Asphalt | from 3 to 5 drops |
| Olive oil | 1.5 c.c. |

About 10 c.c. of "asphalt varnish" (B. Asphaltum)[12] is placed in a beaker and heated on the steam bath for one-half hour. From 3 to 5 drops, delivered from a 1 c.c. pipet, are then placed in a casserole, and 1.5 c.c. of olive oil added. The mixture is heated and stirred for a few minutes until perfect solution is effected. To this is then added, with stirring, the paraffin, which has been previously melted. When it is cooled, a brown solid is obtained.[13] The physical factors of this paraffin mixture are, melting point 45.4 C. (U. S. P. method); plasticity, 28.5; ductility, 29; it is very pliable and


inception.

**Where the Dry Wax Poultice has been used**

Thermozine, known in France as L'Ambrine, has been used in the following Parisian hospitals, with 92% of cures:

Hospital de la Pitie, services of Drs. Lion, Darier

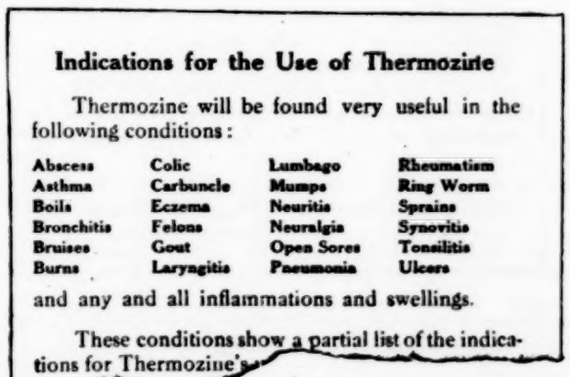
Photographic reproduction from a booklet on "Thermozine" showing that it is identical with "Ambrine."

strong at 38 C., and adheres exceedingly well to the skin, although it detaches easily. This mixture, which is easy to prepare, is inexpensive, the cost of the materials being approximately 10 cents a pound.

Both Hull and Sollmann noticed that tarlike substances and melted paraffin do not mix well. This is noticeable in "Ambrine," which cannot be called an "elegant" preparation. The difficulty may be overcome by first mixing hot olive oil and asphalt; the asphalt will then go into solution. It is interesting to note that the suggested formula (as well as others which were also prepared) is not as plastic as the paraffin itself.[14] This is also true of "Ambrine." On the other hand, the melting point of the paraffin is higher. *The important point, however, in compounding all paraffin preparations is to select a proper grade of paraffin as elaborated below.*

### EXAMINATION OF PARAFFINS AND PARAFFIN PREPARATIONS

The name "paraffin" generally applies to a colorless and tasteless waxlike substance that is solid at ordinary temperature. It is composed of saturated hydrocarbons, that is, they are unable to take up any more hydrogen, and thereby are quite stable; the hydrocarbons in paraffin have the general formula of $C_nH_{2n+2}$, ranging as high as $C_{25}H_{50}$ to


**Indications for the Use of Thermozine**

Thermozine will be found very useful in the following conditions:

| | | | |
|---|---|---|---|
| Abscess | Colic | Lumbago | Rheumatism |
| Asthma | Carbuncle | Mumps | Ring Worm |
| Boils | Eczema | Neuritis | Sprains |
| Bronchitis | Felons | Neuralgia | Synovitis |
| Bruises | Gout | Open Sores | Tonsilitis |
| Burns | Laryngitis | Pneumonia | Ulcers |

and any and all inflammations and swellings.

These conditions show a partial list of the indications for Thermozine's

Photographic reproduction from a booklet on "Thermozine" giving the conditions in which the stuff was alleged to be "very useful."

$C_{27}H_{56}$. Paraffin may be found in crude form in coal, from which source the first paraffin candles were made. It may

6. Made by the Abbott Laboratories, Chicago, and accepted by the Council on Pharmacy and Chemistry for New and Nonofficial Remedies, THE JOURNAL, May 12, 1917, p. 1406.
7. No chemical examination was made.
8. Sollmann, Torald: Suggested Formulas for Paraffin Films, THE JOURNAL A. M. A., April 7, 1917, p. 1037.
9. Hull, A. J.: The Treatment of Burns by Paraffin, Brit. Med. Jour., Jan. 13, 1917, p. 37, The Treatment of Burns by Paraffin, Therapeutics, THE JOURNAL A. M. A., Feb. 3, 1917, p. 373.
10. The "soft paraffin" of the British Pharmacopeia resembles petrolatum, U. S. P., Queries and Minor Notes, THE JOURNAL A. M. A., April 28, 1917, p. 1281.
11. The paraffin used in this formula was supplied by the Standard Oil Company of Indiana; the melting point given by the manufacturers is from 120 to 122 F, which, according to the American Standard of taking melting points, gives higher results than the method described in the pharmacopeia.
12. The "Asphalt Varnish" used was obtained from Remien and Kuhnert Company, Chicago.
13. While needless, a color resembling "Ambrine" may be obtained by the addition of coloring agents.
14. In a personal communication Dr. Sollmann expressed the opinion that the synthetic preparation is inferior to the paraffin used in the formula, basing the view on the greater plasticity of the paraffin. For practical purposes, the paraffin will most probably serve as well as the mixture, especially when it is held in place by bandages, but I believe that the mixture is more adhesive.

be produced from the distillation of brown coal, as in Germany, or from bituminous shale. In America, it is obtained chiefly from the distillation of crude petroleum, being in the residue after the distillation of such products as naphtha (gasoline), kerosene and the lubricating oils. The residue is treated by one of a number of processes causing the unpurified solid paraffin to be made available. The crude paraffin is either sold as such, or is refined. Paraffin or "paraffin waxes"[15] are designated in the trade by their melting points (which in the "American standard" is expressed in Fahrenheit degrees), and as to their state of refinement as "crude," "semirefined" and "fully refined" paraffin. There are certain chemical and physical differences so that two refined waxes having the same melting point would not have the same plasticity. The higher melting point varieties of paraffin are hard and tough at room temperature; when melted, paraffin expands and forms a thin, mobile liquid.

15. Paraffin is sometimes spoken of as "white wax." This is unfortunate, as "white wax" is an official name for "White Beeswax, U. S. P." The term "white wax" is also often applied to "Chinese wax," which is formed from an insect living on the tree, Ligustrum lucidum.

The significant requirements of paraffin for surgical dressings are that it should be solid at body temperature, at the same time having flexibility and adhesiveness, together with a certain amount of strength. A number of brands of paraffin are sold in the United States, so that it seemed advisable to examine some of them and compare them with certain paraffin-film preparations. They were tested as to their melting points, plasticity, ductility, strength of film, etc.

*Melting Point Determination.*—The melting point was determined by the method of the U. S. Pharmacopeia IX, p. 596. The melting point as obtained by this method is lower than the melting point used by manufacturers of paraffin (after conversion to Fahrenheit).

*Pliability and Ductility, Limit Temperature.*[16]—A little of the melted wax was poured from a teaspoon on the surface of the water at about 40 C., in a tin pan (bread mold). This formed a fairly thin film. The temperature of the water was then lowered by the addition of cold water. At each temperature the pliability and ductility were tested thus:

*Pliability Test.*—The film, immersed in water, was doubled on itself, note being taken whether or not it broke.

16. I am indebted to Dr. Torald Sollmann for these methods.

PARAFFINS AND PARAFFIN PREPARATIONS

| Formula No. | Substance | Melting Point, U. S. P. | Ductility Limit | Plasticity Limit | (*a*) Adhesiveness and Detachability (*b*) Strength of Film at 38° |
|---|---|---|---|---|---|
| 1 | "Parowax," Stand. Oil Co. of Ind. | 50.8 | 32.5 | 29.0 | (*a*) Adheres and detaches well; rather hard (*b*) Pliable and strong |
| 3 | "Paraffin 118-120 F.," Stand. Oil Co. of Ind. | 46.8 | 28.5 | 24.5 | (*a*) Does not adhere well; detaches easily (*b*) Pliable but not strong |
| 4 | "Paraffin 120-122 F.," Stand. Oil Co. of Ind. | 47.2 | 29.0 | 24.5 | (*a*) Adheres well; detaches well (*b*) Pliable and fairly strong |
| 5 | "Paraffin 123-125 F.," Stand. Oil Co. of Ind. | 48.8 | 31.5 | 28.5 | Same as 4 |
| 6 | "Paraffin 128-130 F.," Stand. Oil Co. of Ind. | 52.0 | 33.0 | 30.0 | (*a*) Adheres well; detaches not so easily (*b*) Pliable and strong |
| 7 | "Texwax," Texas Co., Port Arthur, Texas | 51.2 | 32.5 | 29.8 | Same as 6 |
| 8 | "Paraffin Wax 122-124 F.," Warren Refining Co., Warren, Pa. | 50.6 | 36.0 | 34-35 | (*a*) Unsatisfactory; does not adhere (*b*) Only slightly pliable; too tough |
| 9 | "Paraffin No. 910," Waverly Oil Works, Pittsburgh | 47.0 | 30.5 | 26-27 | (*a*) Adheres well; detaches well (*b*) Pliable and strong |
| 10 | "Paraffin No. 920," Waverly Oil Works, Pittsburgh | 44.4 | 27.5 | 25.0 | (*a*) Adheres well; detaches well (*b*) Pliable and fairly strong |
| 11 | "Hard Paraffin," Rob't Stevenson & Co., Chicago | 48.0 | 28.5 | 24.5-25.5 | (*a*) Adheres well; detaches well (*b*) Pliable and strong |
| 12 | "Paraffin," Island Petroleum Co., Chicago | 47.2 | 32.0 | 32.5 | Not quite as good as 11 |
| 13 | "Paraffin 122 F.," Gulf Refining Co., Pittsburgh | 46.8 | 30.5 | 27.5-28 | (*a*) Does not adhere so well; detaches well (*b*) Very pliable |
| 14 | "Paraffin 125 F.," Gulf Refining Co., Pittsburgh | 50.0 | 32.0 | 31.0 | About as 13 |
| 15 | "Paraffin 132 F.," Gulf Refining Co., Pittsburgh | 54.8 | 35.5 | 34.0 | (*a*) Does not adhere well (*b*) Not very pliable, but strong |
| 16 | "Paraffin No. 301," National Refining Co., Cleveland | 50.2 | 33.0 | 32-32.5 | (*a*) Does not adhere well (*b*) Not very pliable |
| 18 | Paraffin recovered from "Ambrine" | 48.6 | 30.5 | 28-28.5 | (*a*) Adheres well; detaches well (*b*) Pliable but not strong |
| 19 | "Hyperthermine" | 49.4 | 33.5 | 30.5-31 | (*a*) Does not adhere well; detaches well (*b*) Very pliable and strong |
| 20 | "Ambrine" | 48.4 | 30.5 | 27.0 | (*a*) Adheres well; detaches well (*b*) Very pliable and strong |
| 21 | Paraffin 120-122 F. (see 4), 97.5; olive oil, 1.5; asphalt, 4 drops | 45.4 | 29.0 | 28.5 | (*a*) Adheres excellently; detaches well (*b*) Very pliable and strong |
| 22 | "Parowax" (see 1), 97.5; olive oil, 1.5; asphalt, 4 drops | 49.2 | 32.0 | 30.5 | (*a*) Adheres well; detaches easily (*b*) Pliable and strong |
| 23 | "Mulene" | 51.0 | 36.0 | 28.0 | (*a*) Adheres but detaches with difficulty (*b*) Pliable but not strong |
| 24 | "Parresine," Abbott Laboratories, Chicago | 46.0 | 29.5 | 26.0 | (*a*) Adheres well; detaches easily (*b*) Pliable and fairly strong |
| 25 | "Paraffin 118-121 F.," The Atlantic Refining Co., Philadelphia | 45.8 | 26.4 | 23.2 | (*a*) Adheres well; detaches well (*b*) Pliable and fairly strong |

*Ductility Test.*—The film was pulled under water, note being taken whether it stretched on being pulled and broke with a ragged fracture; or whether it broke sharp without stretching. It is desirable that the pliability and ductility be preserved at as low a temperature as possible.

*Cotton Films, Adhesives and Detachability.*[16]—The melted wax was applied as it would be for burns; namely, a thin layer was painted on the inner surface of the forearm with a camel's hair brush,[17] a transverse strip about an inch wide being made. This was covered with a very thin layer of absorbent cotton, and over this another layer of melted wax was painted. As soon as this had cooled a little, it was covered by a few layers of bandage and left on for at least an hour. At the end of that time, the bandage was removed. The cotton film should be found at the place at which it was applied, showing that it is sufficiently adherent. It should detach without "pulling" the skin.

The results of these tests are given in the accompanying table. It can be seen that nearly all the paraffins examined have properties which would make them useful, the notable exceptions being Nos. 8, 15 and 16. The more satisfactory products would be those having a melting point about 47 C., ductility of 30 or below, and plasticity of 28 or below. The paraffin described in the U. S. Pharmacopeia is not so satisfactory, the required melting point being between 50 and 57 C.

Chaque famille devra toujours avoir chez elle un étui d'Ambrine pour calmer immédiatement et guérir rapidement les "Brûlures"
L'AMBRINE
étant d'un emploi très simple, chacun pourra l'appliquer: le pansement s'enlève très facilement sans la moindre douleur et sans causer d'arrachement. Dès qu'on aura recouvert la brûlure d'Ambrine, il se produira pendant quelques secondes une légère douleur, mais presqu'aussitôt toutes douleurs cesseront et le blessé ressentira un bien-être immédiat. Les tissus se réparent rapidement, et presque toujours sans laisser de cicatrices.
AMBRINE
DU DOCTEUR
BARTHE DE SANDFORT
PANSEMENT
ASEPTIQUE
ET CALMANT
BRÛLURES
GELURES
ENGELURES

Photographic reproduction (greatly reduced) of the carton in which "Ambrine" is now sold.

The use of paraffin bandages has been suggested by Fisher[18] and Sollmann.[19] In such cases, it may very likely be that a paraffin of higher melting point would be more satisfactory, owing to its greater resistance and tougher fiber.

SUMMARY

1. "Ambrine" is essentially paraffin in which a small amount of fatty and asphalt-like body is incorporated; like most secret mixtures, its composition varies.

2. A simple formula for a paraffin film, similar in chemical composition but superior in physical properties to "Ambrine," is that described as Formula 21. The superiority is due to using a grade of paraffin that is better adapted to the purpose. The cost of materials is about 10 cents a pound.

3. The properties of the paraffin used for a surgical dressing are important. A number of different grades have been examined, in order to determine the ones that appear most promising. Paraffins Nos. 3, 4, 10, 11 and 25 are the best in the table, and surpass "Ambrine" itself.

4. It is exceedingly probable that further experience will show that for most purposes simple paraffin will serve just as well as the mixtures—if, indeed, not better.

17. When painting a surface with a paraffin film, I found that the temperature of the paraffin should not be too close to the melting point, but several degrees above; otherwise it does not "set" well.

18. Fisher, H. E.: Nonadhering Surgical Gauze, THE JOURNAL A. M. A., March 25, 1916, p. 939.

19. Sollmann, Torald: Paraffin-Covered Bandages, THE JOURNAL A. M. A., April 21, 1917, p. 1178.

# Correspondence

## ARGUMENTS AGAINST THE "STANDARD BILL" FOR COMPULSORY HEALTH INSURANCE

*To the Editor:*—We oppose the "standard bill" for compulsory health insurance:

1. Because it is un-American. Americanism means that the individual amounts to something; paternalism, that the individual is nonimportant but that the state is all important. Even a beneficent paternalism is harmful because it destroys individualism and discourages thrift.

2. Because it is not demanded by the employees, the employers, or by the physicians who will be compelled to work under its provisions. On the contrary, the employees as represented by organized labor; the employers as represented by the National Association of Manufacturers, the Real Estate Owners Association, the New York Chamber of Commerce, the Board of Trade and Transportation, and others; a combination of both employees and employers as represented by the National Civic Federation; the physicians as represented by the largest and about twenty other county medical societies in this state and the New York State Medical Society; the Chicago Medical Society, and even the Social Insurance Commission of the state of California have all gone on record as being squarely in opposition to the "standard bill"; and moreover, the Special Commission on Social Insurance of the state of Massachusetts reports that "the commission is therefore unanimous in not recommending any health insurance legislation for immediate passage," but it does recommend "an act to establish a state board of employment, printed in appendix . . . ."

3. Because we also "have an instinctive desire to see fair play," and it is not fair play to tax only the thrift of the wage earners and the employers in order to care for the misfortunes of a part of the population only.

4. Because I have learned during twenty-six years of active private practice among the wage earners that: (*a*) more is paid for "movies" and "rum" than is paid for medical attendance and treatment; (*b*) destitution is not all due to sickness—the loss per year due to sickness is much less than that due to voluntary and involuntary holidays; (*c*) the wage earner prefers to be free and independent and not tied down by identification cards, etc.; (*d*) he prefers to have a physician of his own choice to attend and treat him and his family and not have one forced on him by the insurance carrier, and (*e*) he prefers to pay his physician himself, and not through an insurance carrier.

5. Because only a very small part of the population is without needed medical care—so-called surveys made by medically unqualified and therefore incompetent persons to the contrary notwithstanding—and among those who can well afford to pay for proper and adequate medical attendance and treatment, many go entirely without, or depend on "home treatment" or on quack medicines.

6. Because the wage earners receiving in the neighborhood of $1,200 per year can and do receive proper and adequate medical care and treatment when they desire it; the hospitals are not the only places in which the sick can get good medical care, and most of the sick prefer to be treated at home. The man who can do only one thing well must not think all others can do only the same.

7. Because under all the schemes for compulsory health insurance as yet proposed, the persons most needing the insurance will not get it: those who are out of work, except on account of illness, longer than the extension of one week for each four weeks during the previous twenty-six weeks of paid up assessments; those who are unable to get into the voluntary insurance societies because they are unable to pass the medical examination, and those who are not insured because they are unable to get work on account of their age, alcoholism, shiftlessness, general incompetency, or any other disabling condition which prevents them from being employed. In times of financial distress or panic, these unfortunate conditions will be magnified many fold.

8. Because the employer, in order to keep his assessments low, will carefully choose his employees, selecting only the healthy and excluding the others by medical examinations, and therefore there will be a strong tendency to the formation of a large permanent pauper class.

9. Because, while the employer has a great responsibility for occupational diseases, it is unfair to compel him to pay 40 per cent. of the cost of the care and treatment of his employees suffering from sickness due to extrinsic causes—venereal diseases and even from injuries received while committing a misdemeanor or felony.

10. Because, if individual health is proved to be a state asset, then the state should pay the entire cost of the care of all the sick. It can be done better and more cheaply by directly paying the cost of the medical attendance and treatment of the sick, than by the complicated, cumbersome, top-heavy, and dangerous scheme proposed under the "standard bill."

11. Because, under the proposed scheme, the insurance carrier has the choice of making the arrangements for the medical attendance and treatment of the sick wage earner either with the physicians on the panels, if there are any, or with salaried physicians; and either with or without free choice of the physician by the sick wage earner, and it is easy to foresee which the employers—for they will dominate the carriers—will choose: the salaried physicians, because they can get them more cheaply.

12. Because it is the universal experience in medical practice that contract work by the physician is uniformly detrimental to the development of good service and of science. The "standard bill" is simply an extension and legalization of the well known opprobrious and malodorous lodge practice.

13. Because under the foregoing conditions there will not be the same grade and quality of men who will enter the study and practice of medicine, and the public will suffer incomparably therefrom. On account of the low salaries paid by our government it is very difficult to get enough medical men for service in times of peace, and now that we are in a state of war it is necessary to appeal to patriotism in order to get enough medical men to care for our army and navy.

14. Because in the so-called "standard bill" the medical men have not a proper and adequate representation on the commission, council, and on all other boards having to do with medical matters. The "physician" on the commission may be one who has never practiced medicine; or he may have done so for a few years and then have given it up for a more congenial and lucrative business; or he may have practiced medicine among the very wealthy and have never come into contact with the persons who will come under the provisions of this measure except in hospitals and dispensaries. All of these will be out of touch and sympathy with both the sick wage earners and the physicians who will work among them.

15. Because under the provisions of the "standard bill" the physician will be compelled to hire himself out to the insurance carrier on the carrier's own terms, or he can and undoubtedly will have his practice almost or entirely taken away from him and given to one of the salaried physicians.

16. Because we must reason from premises which we can establish, and in New York State, the birthplace of the movement, and where the statistics have been worked out, the number of persons coming directly and indirectly under the provisions of the "standard bill" will be 73.42 per cent. of the entire population, and by adding the estimated number of paupers and improvident persons who will not be able to pay a physician—5 per cent.—there will be only 21.58 per cent. left for private practice.

17. Because with such a large part of the population joined together into societies or "funds" for their own pecuniary benefit, as the employees and employers would be under the "standard bill," it would be a dangerous thing for the state if they should be united as a political party under an unscrupulous boss. The rest of the state would be compelled to yield to them in everything.

18. Because the number of deaths per year in New York State among those directly insured will be 35 per cent. of 147,000, or 51,450, and at $100 per funeral the total amount paid to the undertakers per year will be $5,145,000.

*Should the state subsidize the undertaking business?*

EDEN V. DELPHEY, M.D., New York.
Chairman, Health Insurance Committee, Federation of Medical Economic Leagues.

## A LITTLE MORE CONSERVATISM WITH THE TONSILS DESIRABLE

*To the Editor:*—Truly we are a race of hysterical extremists! We surge madly from the condition of license known as a "wide open town" to the puritanic restraint which follows the Billy Sunday type of religious campaign in the smaller community. We emerge from an era in which thrift was lauded as the greatest of the private virtues to a mad national extravagance which includes every class. We are either very "wet" or so dry that ginger ale and root beer are looked on askance. Either we are so peaceful that the author of "I Didn't Raise My Boy to Be a Soldier" is nearly canonized, or so warlike—in emotion, at least—that those of our legislators who wish to observe some system and economy in our going to war are candidates for lynching, a practice in itself which too well expresses the national impulsiveness. We have gone in for Christian Science, osteopathy, chiropractic, faith healing, fletcherism, Doan's Kidney Pills, electric belts, and every other wild idea that any seeker after publicity or pelf could promulgate.

Unfortunately this national trait too often works to discredit the efforts of earnest, sincere workers in scientific fields. In the etiology of rheumatism and other diseases, there can be no question of the importance of focal infection in the tonsils, about the teeth, and elsewhere. If there is a tendency on the part of some physicians to overwork this factor in obscure cases, it will be eliminated in the reaction, and the focal infection accorded its true importance as an etiologic factor. An unfortunate phase of the prominence given to this idea, however, is the effect on the lay mind. Our impetuous clients hear that "bad teeth and tonsils can cause rheumatism."

From that truth it is an easy step for them to the conclusion that teeth and tonsils are always the cause of all of those myriad symptoms which the layman refers to as "rheumatism." And equally easy is the conclusion that all tonsils are pathologic and should be removed, and they go, not to the internist for diagnosis and treatment of any so-called "rheumatic" condition, but to the laryngologist, and to him not for examination but avowedly for tonsillectomy. If, as one suspects sometimes happens, the laryngologist removes the tonsils on the patient's request without too close a scrutiny to determine whether or not there is a condition which really indicates the procedure, the ultimate result is easy to foresee. The operation will be discredited, and it will become difficult to persuade those really in need of it to undergo it. As a nation we seem incapable of exercising moderation, but the medical profession should carefully avoid being influenced by any therapeutic fads which the public seizes on.

CHARLES DARWIN ENFIELD, M.D., Jefferson, Iowa.

**Philadelphia Large Drug Center.**—The United States leads the world in the manufacture of drugs, and Philadelphia ranks first among the drug centers of the country according to Charles E. Hires, director of the Philadelphia Drug Exchange. The first chemicals manufactured in this country were made in Philadelphia by Christopher, Jr., and Charles Marshall, who began the manufacture of chemicals in 1789. The first morphin, quinin and strychnin were made in this city and the first drug mill in the country was established at the Falls of Schuylkill. The United States census for 1914 credited Philadelphia with twenty-two pharmaceutical and fifteen chemical plants. More than 20,000 people are employed and millions of dollars worth of the products are being shipped to foreign countries.

# Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### SWINDLER WITH A HARD LUCK STORY

*To the Editor:*—Dr. Walter A. Landry of Chester, Pa., warned in a recent letter against a swindler who imposed on him—a man from 25 to 30 years of age, of dark complexion, about 5 feet 5 inches, about 130 pounds, thin and anemic, who speaks with a German accent. This description fits closely a swindler who imposed on me about six weeks ago. The only difference is that, I should say, my swindler could not be described as thin and anemic. He was about 5 feet 6 inches, weighing from 145 to 150 pounds, and spoke with a strong German accent. The game he worked on me was to claim relationship with people whom I knew in a neighboring city and with a well-known doctor of my acquaintance. He was suddenly stranded in Chicago and needed enough money to get home. He worked me for $10. The circumstances of his swindle would indicate that he was a rather ingenious swindler, who would be able to invent various schemes to suit different occasions.

ONE ASHAMED TO SIGN HIS NAME, Chicago.

### ANOTHER CAUTION NOTE

*To the Editor:*—A young man of dark complexion, rather slim, who weighs about 135 pounds, is going through the country posing as a major of the French army, home on a furlough, showing scars on his body as proof of having been wounded. His idea is to get acquainted with influential business and professional men, and finally procure money on his personal check without any funds.

U. D. SEIDEL, M.D., Akron, Ohio.

# Medical Education and State Boards of Registration

### COMING EXAMINATIONS

DELAWARE: Dover and Wilmington, June 19-21. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

FLORIDA, Regular: Palatka, June 19-20. Sec., Dr. E. W. Warren, Palatka.

GEORGIA: Atlanta and Augusta, May 31-June 2. Sec., Dr. C. T. Nolan, Marietta.

ILLINOIS: Chicago, June 14-16. Sec., Dr. C. St. Clair Drake, Springfield.

IOWA: Iowa City, June 7-9. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

KANSAS: Topeka, June 19-21. Sec., Dr. H. A. Dykes, Lebanon.

KENTUCKY: Louisville, June 19-21. Sec., Dr. A. T. McCormack, Bowling Green.

LOUISIANA: New Orleans, June 7-9. Sec., Dr. J. A. Henderson, 921 Canal St., New Orleans.

MARYLAND: Baltimore, June 19. Sec., Dr. J. McP. Scott, 131 W. Washington St., Hagerstown.

MICHIGAN: Ann Arbor, June 12-14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, June 5-8. Sec., Dr. Thomas S. McDavitt, Lowry Bldg., St. Paul.

MISSISSIPPI: Jackson, June 19-20. Sec., Dr. W. S. Leathers, Oxford.

MISSOURI: St. Louis, June 18. Sec., Dr. J. A. B. Adcock, Jefferson City.

NEBRASKA: Lincoln, May 31-June 1, Sec., Dr. E. Arthur Carr, 516 Banker's Life Bldg., Lincoln.

NEW HAMPSHIRE: Concord, June 25-26. Sec., Dr. W. T. Crosby, Beacon Bldg., Manchester.

NEW JERSEY: Trenton, June 19-20. Sec., Dr. Alexander MacAlister, 438 East State St., Trenton.

NEW YORK: Albany, Buffalo, New York, and Syracuse, May 22-25. Sec., W. J. Denno, Education Bldg., Albany.

NORTH CAROLINA: Raleigh, June 19. Sec., Dr. H. A. Royster, 423 Fayetteville St., Raleigh.

OHIO: Columbus, June 11-14. Sec., Dr. George H. Matson, State House, Columbus.

OREGON: Portland, June 5. Sec., Dr. Herbert S. Nichols, Corbett Bldg., Portland.

SOUTH CAROLINA: Columbia, June 12. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

TENNESSEE: Knoxville, Memphis and Nashville, June 15-16. Sec., Dr. A. B. De Loach, Scimitar Bldg., Memphis.

TEXAS: Austin, June 19-21. Sec., Dr. M. F. Bettencourt, Mart.

VIRGINIA: Richmond, June 19-22. Sec., Dr. J. W. Preston, 215 S. Jefferson St., Roanoke.

WISCONSIN: Milwaukee, June 26. Sec., Dr. J. M. Dodd, 220 E. 2nd St., Ashland.

### Chiropractic Bill in Hawaii Vetoed

A bill to legalize chiropractic passed the Hawaiian Territorial Legislature recently but was vetoed by Governor Pinkham, who explained his veto in part as follows:

First, it (the chiropractic bill) conflicts with the laws heretofore enacted and now on the statute books for the protection of public health, for which public health the legislature has appropriated in the past and is now appropriating great sums of money.

Second, the law already provides ample means and avenues for special practice, hence whatever benefit may accrue to human beings by any special practice is now available to whomsoever elects.

In its exactions the (medical practice) law has laid its hand heavily on those professionally concerned in the diagnosis and treatment of disease and in the practice of surgery. It has compelled them to submit to a searching examination as to their qualifications and their ability to comply with the law, and their practice, after admission, is strictly controlled by law.

Included among licensed practitioners are those who specialize, but they do not demand or request, nor does the law concede them legal recognition based on their ability to specialize, for these thoroughly equipped men are aware that, if a practitioner is not qualified to diagnose the range of general disease and the specifically legally listed diseases, such practitioner is dangerous to public health and public finance, as our past epidemic expenditures strikingly illustrate.

Other classes of specialists have arisen, and others will arise, who demand almost complete immunity from thorough, comprehensive education and experience. They demand absolute exemption from official examination as to their knowledge of and experience with disease. They demand the utmost unrestricted freedom in spite of their acknowledged limitations and definite inexperience, to decide for themselves.

No school can comply with the law unless its education has been comprehensive. Chiropractic is deficient in the essentials, hence seeks special immunities, which I cannot see my way to approve.

### Kansas February Report

Dr. H. A. Dykes, secretary of the Kansas State Board of Medical Registration and Examination, reports the written examination held at Topeka, Feb. 13, 1917. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 7, of whom 2 passed, and 5 failed, including 2 osteopaths. Seven candidates were licensed through reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|---|---|---|
| Tulane University of Louisiana | | (1916) | 91 |
| Jefferson Medical College of Philadelphia | | (1916) | 90 |
| | FAILED | | |
| University of West Tennessee | | (1915) 64; (1916) | 74 |
| McGill University | | (1897) | 63 |

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| American College of Medicine and Surgery | | (1903) | Arkansas |
| State University of Iowa College of Medicine | | (1889) | Iowa |
| State University of Iowa Coll. of Homeo. Med. | | (1890) | Iowa |
| Coll. of P. and S., Kansas City, Kan. | | (1901) | Missouri |
| Central Medical College of St. Joseph | | (1900) | Missouri |
| Marion-Sims College of Medicine | | (1899) | Oklahoma |
| National University of Arts and Sciences | | (1915) | Missouri |

### Kentucky Reciprocity Report

Dr. A. T. McCormack, secretary of the State Board of Health of Kentucky, reports that the following candidates were licensed through reciprocity from Jan. 1 to March 7, 1917:

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| Meharry Medical College | | (1902) | Iowa |
| Universities of Nashville and Tennessee | | (1911) | New Mexico |

### Pennsylvania Reciprocity Report

Mr. N. C. Schaeffer, secretary of the Pennsylvania Bureau of Medical Education and Licensure, reports that 4 candidates were licensed through reciprocity from Jan. 4 to Jan. 29, 1917:

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| Howard University | | (1909) | Virginia |
| Johns Hopkins University | | (1897) | Maryland |
| Hahnemann Med. Coll. and Hospital of Phila. | | (1913) | New Jersey |
| University College of Medicine | | (1909) | W. Virginia |

# Medicolegal

### City Not Liable for Death Attributed to Stagnant Water

*(Bruggeman et al. vs. City of York (Pa.), 98 Atl. R. 970)*

The Supreme Court of Pennsylvania, in affirming a judgment of compulsory nonsuit, say that the plaintiffs sued to recover damages from the city of York for the death of their 9 year old son, alleged to have been due to disease contracted from a stagnant pool of water which the municipality permitted to collect and remain on the street in front of the plaintiffs' residence. The nonsuit was entered by the court below on the ground of insufficiency of proof to show that death was caused by the alleged negligence of the defendant. The municipality had constructed a fire engine house opposite the plaintiffs' residence, and in the course of the work raised the grade of the lot on which the building was erected, and in so doing caused water which formerly passed over its surface to collect in front of the plaintiff's dwelling and remain there and collect drainage water and filth of various kinds and become stagnant. On occasions of heavy rains the pool formed by the filling done by the city would overflow, causing the stagnant water to flow into the cellar of the plaintiffs' house, making it damp and musty. One Sunday the plaintiffs' son played in the cellar the greater part of the day. The following Tuesday, after returning from school in the afternoon, he assisted his mother in cleaning the gutter of the street in front of their home. The odor arising from the gutter while being cleaned was very offensive. That evening the boy complained of not feeling well and ate but little supper, and during the following day had little or no appetite. On Thursday he complained of stomach trouble and headache, and on Friday remained home from school in the afternoon. He continued in this condition until the following Sunday, when the family physician was called, who found him suffering from pneumonia, from which disease the boy died on the following Tuesday. The physician testified that when he first saw the boy on Sunday he was in an anemic condition resulting, in his opinion, from impure air, and because of this condition was unable to resist the attack of pneumonia which followed. Two physicians testified on behalf of the plaintiffs, and both said that in their opinion the death of the boy was the result of his insanitary surroundings. But, in view of other testimony, the court holds that a verdict for the plaintiffs would be the result of mere conjecture on the part of the jurors, based on an inference selected from a number of equally probable inferences, in other words, a mere guess as to the precise cause of the disease, and that the trial court was right in declining to submit the cause to a jury and in entering a compulsory nonsuit. It was not enough for the plaintiffs to show that the injury complained of was due to one of two or more possible causes if the defendant was responsible for but one of them. They must go farther and show that the latter cause was the proximate one from which the injury followed as the natural and probable result, and that the succession of events leading up to the injury were linked together as a natural whole without intermediate cause not attributable to the defendant's wrongful act.

### Not Privileged

*(Kelly vs. Dykes et al. (N. Y.), 161 N. Y. Supp. 551)*

The Supreme Court of New York, Appellate Division, First Department, in reversing a judgment obtained by the plaintiff in this personal injury case, says that a claim of error was predicated on a refusal of the trial court to permit the defendants to interrogate a physician on whom the plaintiff had called a few days before the trial. The defendants sought to show, and if permitted might have been able to show, that this visit and the conversation which ensued had nothing to do with any medical treatment, but was only as to the testimony the physician would give if called as a witness. To this extent, at least, the defendants should have been allowed to go, for it is not every conversation with a physician which is protected by statute.

# Society Proceedings

## COMING MEETINGS

AMERICAN MEDICAL ASSOCIATION, NEW YORK, JUNE 4-8.

American Academy of Medicine, New York, June 4-5.
American Association of Anesthetists, New York, June 2.
Am. Assn. of Genito-Urinary Surgeons, Rochester, Minn., May 21-23.
Am. Climatological and Clin. Association, Lakewood, N. J., May 29-31.
American Dermatological Association, Cincinnati, May 24-26.
American Gynecological Society, Pittsburgh, May 31-June 2.
American Laryngological Association, Atlantic City, May 28-30.
Am. Laryn., Rhin. and Otol. Society, Niagara Falls, Can., June 1-2.
Am. Medico-Psychological Association, New York, May 29-June 1.
American Neurological Association, Boston, May 21-23.
Am. Ophthalmological Society, Virginia Hot Springs, May 29-30.
American Orthopedic Association, Pittsburgh, May 31-June 1.
American Otological Society, Atlantic City, May 29-30.
American Pediatric Society, White Sulphur Springs, May 28-30.
American Proctologic Society, New York, June 4-5.
American Psychopathological Association, Boston, May 24.
American Radium Society, New York, June 4.
American Society of Tropical Medicine, New York, June 4-5.
American Surgical Association, Boston, May 31-June 2.
American Therapeutic Society, New York, June 1-2.
Conference of State & Prov. Bds. of N. Amer., Washington, May 30-31.
Connecticut State Medical Society, New Haven, May 23-24.
Florida Medical Association, Atlantic Beach, May 18-19.
Maine Medical Association, Portland, June 12-13.
Massachusetts Medical Society, Boston, June 12-13.
National Assn. for the Study of Epilepsy, Skillman, N. J., May 28-29.
Oregon State Medical Association, Portland, June 28-30.
Rhode Island Medical Society, Providence, May 31.
South Dakota State Medical Association, Yankton, May 28-30.
Washington State Medical Association, Spokane, June 17-19.

## AMERICAN ASSOCIATION OF IMMUNOLOGISTS

*Fourth Annual Meeting, held at New York, April 6-7, 1917*

The President, Dr. Richard Weil, in the Chair

### Treatment of Dermatitis Venenata by Vaccines

DR. ALBERT STRICKLER, Philadelphia: I undertook this study with the object of throwing some light on a number of factors relative to dermatitis venenata: (1) the elaboration of an endermic skin test; (2) the determination of a possible influence of an intramuscular injection of homologous vegetable toxins; (3) possible desensitization of individuals by injection of homologous vegetable toxins; determination of complement fixing bodies (if existing) in serums of patients who had had an attack and had been treated by injection of homologous vegetable toxins. Toxins of ivy, sumac and nettle were isolated and employed. Twelve patients were studied, with the following impressions: 1. Intramuscular injection of the toxins of these poisonous plants has an influence on the course of dermatitis venenata. 2. This is not advocated as a routine procedure, except in severe cases. 3. The immunity is probably a tissue immunity, transient in character. 4. It is possible to develop a skin test in this condition, and also to desensitize individuals against plant poisoning. 5. Complement fixation is apparently absent in dermatitis venenata.

DISCUSSION

DR. A. P. HITCHENS, Glenolden, Pa.: Some years ago Dr. Frod studied the substance in *Rhus toxicodendron* responsible for the dermatitis. An antirhus serum was produced in horses. In patients in whom this was applied locally, the rash disappeared over night. This seemed to show an immunity reaction in the horses. "Toxin" was hardly the correct word to describe these extracts.

DR. A. F. COCA, New York: I think Dr. Hitchens is correct in saying that this is not a "toxin." The condition depends on the sensitiveness of the individual, just as to pollen, or any other protein. The resistance after treatment is not immunity, but desensitization, as in recovery from hay-fever. No antibodies are formed in so short a time. Application of the antigen into the body fluids differs from local external application. I would ask whether these persons showed positive skin tests after the treatment. Dr. Cooke finds they are still positive after successful pollen treatment, but the ophthalmic test is negative.

DR. J. HEAD: Is the injection attended with any soreness?

DR. A. STRICKLER, Philadelphia: When the test is made with small doses, there is no soreness; when with large doses, there is considerable soreness. I have not done the skin reaction after the treatment. I think it is a very good suggestion.

### The Epidemiology of Bacillary Dysentery

DR. W. G. SMILLIE, Boston: I reported the results of a series of studies conducted by the Floating Hospital of Boston, in 1916, to discover the points of origin of infection in cases of bacillary dysentery, and the means of transmission. Cases were studied as regards temperature, humidity, neighborhood conditions, family conditions, source of infection. 1. The incidence seemed to follow the fly curve more closely than the temperature curve. 2. Poor housing conditions were a fertile source of infection. 3. Breast fed infants of foreign parents escaped more than American children. 4. Sources of infection were: contact with an acute case or carrier; contact with a house case; condensed milk; ice cream; flies; milk; water; fruit. Results in infants from contact with mild adult cases were often fatal. As a rule, the older the children, the milder the disease.

### Some of the Conclusions Drawn from a Comparative Study of Different Methods of Performing the Wassermann Reaction

DRS. J. BRONFENBRENNER and M. J. SCHLESINGER, Pittsburgh: There is as yet no absolute method for standardization of the Wassermann reaction. Discrepancies occur in different laboratories between the clinician and the serologist. The clinician does not take sufficient care to secure uniform conditions, or supply an adequate history. There are also many serologists who are incapable of controlling their own tests. Methods differ in delicacy. Serum should be fresh and not inactivated, and antigen protein free. The procedure of preference makes use of fresh unheated serum. The complement of the serum is titrated and utilized in the test, guinea-pig complement being added when necessary. We use reprecipitated acetone-insoluble lipoids of which one-tenth the anticomplementary dose still contains from ten to 100 antigenic units. The antihuman hemolytic system is used and the erythrocytes are sensitized before being added to detect the presence of free complement. Incubation for fixation of complement is best performed for thirty minutes at 37 C. in the water bath. However, one can use ice-box incubation for from ten to fifteen hours as a presumptive test to eliminate the negative serums, and 37 C. incubation for five minutes to eliminate the strongly positive serums. For diagnosis, however, one-half hour incubation at 37 C. is the best.

DISCUSSION

DR. HANS ZINSSER, New York: I agree that fresh serum is absolutely necessary, but I do not think that it is a good plan to work with unheated serum.

DR. J. A. KOLMER, Philadelphia: I agree that crude alcoholic extracts of tissues, with or without the addition of cholesterol, should not be used in conducting the syphilis reaction with active serum, as in Noguchi's test and that of Hecht-Gradwohl. A suitable insoluble lipoid extract serves best as antigen and yields less nonspecific reactions.

DR. RICHARD WEIL, New York: It is a fallacy for the serologist to assume the clinical history as a guide. He should not need the history as proof of the disease. The serologist must report the reaction as he finds it, without reference to the clinician.

DR. J. BRONFENBRENNER, Pittsburgh: An essential point is that in the preparation of Noguchi's antigen, the cholesterol is removed, and this makes the sample of antigen less anticomplementary. To Dr. Weil I would say that the only way for a serologist to standardize his reagents is to do so with a known syphilitic serum on hand. A good and complete history must be obtained, but the serologist should not attempt to make a diagnosis. His duty is to report the reaction. Many doubtful reactions, however, could be better understood if a proper history were available.

### An Antigenic Classification of the Group IV Pneumococci

MISS MIRIAM P. OLMSTEAD, New York: A study of the Type IV pneumococci, which have been considered a heterogeneous series of independent strains, was undertaken at the Presbyterian Hospital in connection with an investigation of postoperative pneumonia, in which the Type IV pneumococci have been found to be an important etiologic factor. Agglutination has been used for differentiating the strains, confirmed by a few absorption experiments and complement fixation tests. Thirty-seven immune serums have been used and ninety-four cultures have been grouped. Forty-six from normal mouths, forty-eight from other sources. Not all cultures have been tested against all serums, but enough tests have been performed to demonstrate twelve distinct groups, the members of which crossagglutinate with each other but not with other groups. The groups contain from two to seventeen strains each, many apparently identical, but some divided into subgroups, evidenced by nonreversible reactions. A few strains are slightly and irregularly agglutinated by Type II serums, but according to agglutination and complement fixation reactions are much more closely related to Type IV strains. These may be considered connecting links between Type II and Type IV, but should be classified as Pneumococcus IV rather than II.

DISCUSSION

DR. RUFUS I. COLE, New York: I would ask Miss Olmstead whether she has tried dilutions of these serums, and also if she finds that the organisms are typical. The study of these types of organisms is going to be interesting work from an immunologic standpoint. It will be interesting to discover whether or not persons closely associated with each other carry organisms of these nonpathogenic groups. It remains to be shown whether these atypical kinds tend to become more fixed and whether their occurrence ever produces epidemics. In South Africa the type that causes the disease most frequently is not the kind we usually have.

DR. RICHARD WEIL, New York: I would like to know whether or not the absorption tests followed an absolute parallel with the agglutination tests. Do the different known agglutinating strains show any capacity whatever for absorption?

MISS MIRIAM P. OLMSTEAD, New York: The strains within any group agglutinated each other 1:80 or 1:160. In some groups there were subgroups, the type serums agglutinating all strains in the same dilutions, but the serums of the subgroup not agglutinating the type strains. The strains agglutinated by both II and IV serums were agglutinated very slightly by II, 1:2, or 1:10 only. In many instances, no agglutination was noticeable until the tests had stood in the ice-box over night. One of the strains that I considered Group IV was also tested at the Rockefeller Institute and called Group IV, while a strain agglutinated slightly by II serum and strongly by the IV serum was called II-x. Few absorption tests have been done, but those few paralleled the agglutination tests.

### Complement Fixation Studies on the Group of Acid Fast Bacteria

DR. JEAN V. COOKE, San Francisco: Cross fixation tests, with varying amount of immune rabbit serums and a number of both pathogenic and nonpathogenic acid fast bacteria as antigens, gave the following results: 1. Immune serums which will give fixation in amounts varying from 0.004 to 0.0002 c.c. can be obtained with any of the acid fast bacteria. 2. There is a group fixation reaction in which all members of the group participate when 0.1 c.c. of immune serum is used. With serums of very high titer, all organisms will react with 0.01 c.c. of serum. As smaller amounts of serum are employed, various members of the group fail to give fixation until near the titer limit there is usually a small group which still reacts. These groups are not always sharply defined. 3. The immune substances are still present and can be detected in serums for more than three years.

*(To be continued)*

# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Orthopedic Surgery, Boston

*April, XV, No. 4*

1 Scoliosis. Treatment. E. G. Abbott, Portland, Me.—p. 243.
2 Use of Autogenous Bone Graft Pin in Treatment of Painful Flat Foot, Paralytic Valgus, etc. R. E. Soule, New York.—p. 292.
3 *Relation of Blood Supply to Longitudinal Growth of Bone. S. L. Haas, San Francisco.—p. 305.
4 *Giant Cell Sarcoma and Benign Cysts of Bone; Report of Cases. A. R. Kimpton, Boston.—p. 317.
5 Portable Plaster Apparatus. A. O'Reilly, St. Louis.—p. 324.

3. **Blood Supply and Longitudinal Bone Growth.**—The practical lesson to be derived from Haas' investigation is to caution surgeons to exercise care to preserve the blood supply to the epiphysis when performing any extensive operations on actively growing bones, especially, if the greatest amount of growth takes place from that particular epiphyseal line.

4. **Giant Cell Sarcoma and Benign Cysts of Bone.**—Following a slight injury, one of Kimpton's patients, a girl, 5 years of age, sustained a "green stick" fracture of the upper end of the right tibia. Nothing abnormal about the leg had been noted previous to injury. Swelling began about the time of the fracture. There was no pain. Thirteen months later operation showed that the growth was a solid tumor of soft, granular, whitish material, divided into sections by fibrous tissue. There was a small amount of fluid, probably edema. The tumor was removed by curetting, the cavity wiped out with phenol and alcohol, and then packed with dry sterile gauze. Pathologic report: "giant cell sarcoma." Two years later a return was noted. Curetting repeated. No return after four years. A second patient, a girl, 15 years of age, sustained an injury to her hand, while playing in the gymnasium. A diagnosis of fracture was made, and the Roentgen ray showed not only fracture but probable bone cyst. The patient refused operation. One year later a resection was done. Nine months after this there was a recurrence, Kimpton again operated and since then there has been no recurrence. At both operations the tumor consisted of a shell of bone filled with dark brown fluid, which was under pressure. Pathologic report: "giant cell sarcoma." A recent report shows the patient to be perfectly well.

### Archives of Internal Medicine, Chicago

*April, XIX, No. 4*

6 *Effect of Muscular Work, Diet and Hemolysis on Serum Proteins. A. H. Rowe, Oakland, Calif.—p. 499.
7 *Causes of Variation in Concentration of Urea in Blood of Young Healthy Adults. T. Addis and C. K. Watanabe, San Francisco. —p. 507.
8 *Autotransplantation and Homotransplantation of Thyroid, Using Thyroid Capsule as Seat of Transplantation. J. H. Hess and A. A. Strauss, Chicago.—p. 518.
9 *Effect of Salicylates on Experimental Arthritis in Rabbits. B. Fantus, W. E. Simmonds and J. J. Moore, Chicago.—p. 529.
10 *Roentgenography of Lungs. Roentgenographic Studies in Living Animals After Intratracheal Injection of Iodoform Emulsion. C. A. Waters, S. Bayne-Jones, Baltimore, and L. G. Rowntree, Minneapolis.—p. 538.
11 *Case of Infundibular Tumor in Child, Causing Diabetes Insipidus with Tolerance of Alcohol. L. Newmark, San Francisco.—p. 550.
12 *Reactivated Thymus; Report of Case of Thymic Myasthenia. G. H. Hoxie, Kansas City, Mo.—p. 564.
13 *Diastatic Activity of Urine and Feces with Special Reference to Diseases of Pancreas. C. W. McClure and J. H. Pratt, Boston. —p. 568.
14 *Suprarenal System and Carbohydrate Metabolism. G. M. Mackenzie, New York.—p. 593.
15 *Study of Ethylhydrocuprein (Optochin) in Treatment of Acute Lobar Pneumonia. H. F. Moore and A. M. Chesney, New York. —p. 611.

6. **Effect of Muscular Work, Diet., etc., on Serum Proteins.**—Rowe's investigations on this effect of work on serum proteins in normal men show a very decided increase in the total proteins, which increase occurs more in the albumin than in the globulin fraction. The nonproteins increase very slightly. The work done was on a bicycle ergometer to a point where the subjects were near exhaustion, except one instance in which increase in proteins due to merely walking around the laboratory is shown. An immediate effect of diet on serum proteins is practically wanting, while a high protein diet continued for several days produces a slight increase in the serum proteins. The percentage of globulin seems to be slightly increased in cases in which healing of fractures or operative incisions is occurring and in which no signs of infection are present. Serum proteins undergo no marked changes after the serum has been kept on ice for forty-eight hours. Hemolysis, when excessive, definitely increases serum concentration, while slight hemolysis produces only a very slight increase. A few suggestions about the technic and use of Robertson's microrefractometric method are given.

7. **Concentration of Urea in Blood.**—Differences in diet are held by Addis and Watanabe to be a cause of variation in the concentration of urea in the blood of normal persons. On a constant diet a variation of from 0.0156 to 0.0438 gm. urea per hundred cubic centimeters of blood was found in twenty-nine experiments on twenty-five normal persons. Differences in the rate of protein catabolism are the principal cause of the variation which was found in the blood urea concentration of normal persons on a constant diet. The blood urea concentration of normal persons is not maintained at a constant level by a proportionate increase in the rate of excretion of urea from the blood by the kidneys, whenever there is an increase in the rate of entrance of urea from the tissues into the blood. Under inconstant conditions variation in blood urea concentration may be caused by alterations in the activity of the kidneys. Permanent individual peculiarities play no part as a cause of variation in the blood urea concentration of different normal persons. In a group of twenty-two subjects a variation of from 0.0225 to 0.06 gm. urea per hundred cubic centimeters of blood was found in a series of 106 estimations, carried out in the morning before breakfast. Practically the same degree of variation was shown by one of these subjects, on whom fifty estimations were made.

8. **Thyroid Autotransplantation.**—Having under their care a large number of cretins in whom cessation of thyroid feeding leads rapidly to a recurrence of myxedema with its train of symptoms, Hess and Strauss were led to undertake experimental work on autotransplantation and homotransplantation of the thyroid. Autotransplantation of the thyroid into the thyroid capsule was successful in all cases. The authors believe that there should be a minimum disturbance of the blood supply in the region in which the transplant is placed, and that foreign bodies, such as suture material, should not come into contact with the transplant. The varying degree to which a homotransplant takes depends on the amount of reaction between the host and the tissue transplanted. A familial relationship and probably the early age of the animals on which operation was performed were important factors in the results.

9. **Salicylates in Arthritis.**—The results of the experiments reported by Fantus and his associates indicate that in the experimentally induced arthritis of rabbits salicylates are not only worthless, but even harmful. Sodium salicylate, when used in a dose comparatively harmless to animal controls, was decidedly detrimental and liable to be fatal to animals infected with the hemolytic streptococcus. The addition of sodium bicarbonate does not lessen much the harmfulness of the salicylate to infected rabbits. Sodium bicarbonate given alone is not injurious to infected rabbits, neither does it produce a noticeable improvement. Acetylsalicylic acid, in equivalent dosage, appears to be much more toxic to normal rabbits than is sodium salicylate, and is harmful to infected rabbits as well. Salophen has either no influence or an unfavorable one on the course of the infection.

10. **Roentgenography of Lungs.**—A 10 per cent. suspension of iodoform in olive oil was injected into the lungs for purposes of roentgenography with most satisfactory results. Experiments were made with solution of thorium. The shadows cast by this fluid in the air passages were too faint and diffuse for practical value. The fluid also seemed more toxic than the iodoform emulsion. When the lungs were dissected after an intratracheal injection of iodoform oil, this material, apparently in the same degree of suspension, was found in the bronchi, bronchioles and smallest air passages.

The mortality among the animals injected appears to be approximately 25 per cent., or three out of thirteen. The type of lesion in the lungs of the dogs whose death was considered to be due ultimately to the injected emulsion, was that of a proliferative bronchopneumonia. As similar suspensions of iodoform in oil have been used in the local therapy of human pulmonary diseases, it is hoped that perfection of the method may ultimately permit its application to man. This preliminary study is the basis of the belief of the authors that by such a method it may become possible to define with precision many roentgenographic shadows which are at present largely data for speculation.

11. **Infundibular Tumor.**—An account is given by Newmark of a boy who died at 14 years after having had diabetes insipidus continuously for about five years. Signs of a tumor appeared only about two weeks before death. A craving for alcoholic drink and unusual tolerance of it are recorded. A tumor occupying the region of the infundibulum, extending forward through the lamina terminalis, between the frontal lobes, and backward into the third ventricle and destroying the neurohypophysis and most of the pars intermedia, accounted for the diabetes insipidus. There was also atrophy of the pineal body. A survey of the literature confirms the view that a tumor causing diabetes insipidus is commonly situated in, or near, the neurohypophysis, but occasionally in the pineal body. It does not appear from clinico-pathologic observations that it is overproduction of a diuretic substance that causes diabetes insipidus.

12. **Reactivated Thymus.**—Hoxie's patient, first seen at the age of 19, had been suffering for two years from shortness of breath. He had measles as a child; no other diseases except a headache about three to five times a year since 10 years of age. The patient vomited at the end of each attack. Formerly he was the "fattest" one in the family, but was now thin. Sleep was poor on account of a "stretching of the diaphragm"—evidently a feeling of constriction. The only important physical finding was increased submanubrial dulness. The roentgenogram of the chest showed an enlarged shadow in this area. The manubrium was resected and some pieces of thymus removed. The microscopic study of these showed the epithelialization described by Matti and Klose as characteristic of the reactivation of the adult thymus.

13. **Diastatic Activity of Urine.**—The results reported by various authors, not only in experimental pancreatic lesions in animals, but in pancreatic disease in man, led McClure and Pratt to the present study. The method employed to estimate diastatic activity was one devised by Wohlgemuth. The authors studied the diastatic activity of the urine in twenty-two healthy adults and in 108 hospital patients. These patients were without evidences of pancreatic disease or diabetes mellitus. The conclusions arrived at, in part, are: The estimation of the diastatic activity of the urine is of very slight value in the diagnosis of pancreatic disease. In rare instances, however, a large amount of diastase is present—more than 500 units per cubic centimeter. This finding strongly suggests disease of the pancreas. The diastatic activity in the urines of persons with normal pancreas varies widely. The estimation of diastatic activity in the feces is of slight value as an aid to the diagnosis of disease of the pancreas. Obstruction of the pancreatic ducts in man results in a low diastatic activity in the feces. The diastatic activity in the feces of persons without pancreatic disease varies widely. The authors suggest that the absence of diastatic activity in conditions in which the pancreas is normal is probably due to complete absorption of the diastase by the intestines.

14. **Suprarenal System and Carbohydrate Metabolism.**—Mackenzie believes he is justified in accepting the following view of the relation of the suprarenal system to carbohydrate metabolism: 1. Nervous stimuli, especially of the sympathetic, represented by piqûre or splanchnic stimulation, are followed by an increased secretion of epinephrin, and this hypersuprarenalinemia like that following epinephrin injections, causes hyperglycemia and glycosuria in part by inhibiting glycogenesis, and in part by furthering glycogenolysis. 2. The hyperglycogenolysis thus produced is dependent partly on a direct stimulation of the liver cells and partly on its action in rendering the receptive material between the sympathetic nerve endings and the liver cells more sensitive to nervous stimulation. 3. Epinephrin does not produce its effects by inhibiting glycolysis, and the disturbances in sugar metabolism following its administration have little or nothing to do with the loss of glycolytic power, which is probably a part of the altered metabolism in diabetes mellitus. 4. A specific physiologic relation between the islands of Langerhans and the suprarenal medulla is unproved. 5. Suprarenalectomized dogs show a diminution of the power to form glycogen from glycose. 6. Following extirpation of the suprarenals in depancreatized dogs there is a rapid disappearance of hyperglycemia. 7. Sugar administered to such animals is neither oxidized nor stored as glycogen, but appears quantitatively in the urine.

15. **Ethylhydrocuprein in Treatment of Lobar Pneumonia.**—As judged from the series of thirty-two cases studied by Moore and Chesney when ethylhydrocuprein hydrochlorid is given by mouth to patients suffering from acute lobar pneumonia in such amounts that they receive at least 0.024 gm. per kilogram of body weight twenty-four hours, and when the size and spacing of the individual doses are adequately regulated, a specific pneumococcidal action appears in their blood within a few hours, and it can be maintained more or less constant for several days. In order to maintain the bactericidal action in the blood at a constant level the intervals between the individual doses given by mouth should not ordinarily exceed about two and one-half to three hours. When ethylhydrocuprein is given by mouth according to a scheme of dosage as outlined, the evidence points to some retention or accumulation in the blood of part of the drug absorbed. Administration of ethylhydrocuprein hydrochlorid by mouth appears to be more satisfactory than intramuscular administration. Pneumococci, not only in vitro, but also in the human body in patients treated with ethylhydrocuprein, may acquire the property of more or less complete resistance or "fastness" to the drug. Toxic symptoms, such as tinnitus, deafness, amblyopia or amaurosis (retinitis) may be observed in the use of the drug in man; they are generally transient. Retinitis, however, may result in more or less permanent impairment of vision.

### Arkansas Medical Society Journal, Little Rock

*April, XIII, No. 11*

16 Information Regarding Correlated Activities of Council of National Defense and Advisory Commission, Medical Departments of Government and Committee of American Physicians for Medical Preparedness. F. F. Simpson, Pittsburgh.—p. 223.
17 Case of Uncinariasis Complicated with Hyperchlorhydria and Pylorospasm. T. M. Fly, Little Rock.—p. 227.

### Boston Medical and Surgical Journal

*April 26, CLXXVI, No. 17*

18 *Comparative Results in Suprapubic and Perineal Prostatectomies. J. M. Gile, Hanover, N. H.—p. 587.
19 *Method of Supporting Bladder in Certain Cases of Cystocele. H. L. Smith, Nashua, N. H.—p. 591.
20 Diagnosis of Extra-Uterine Pregnancy. G. DeN. Hough, New Bedford.—p. 593.
21 Extra-Uterine Pregnancy. R. H. Seelye, Springfield.—p. 595.
22 *Variations in Pulmonary Resonance. G. C. Shattuck, Boston.—p. 599.
23 *Variations in Pulmonary Voice Sounds. W. D. Reid, Newton. —p. 601.

18. **Results in Suprapubic and Perineal Prostatectomies.**—The total number of cases operated on by Gile was 62. Of these, 24 were performed by the suprapubic route and 38 by the perineal. Among the 24 suprapubic operations there were 11 deaths; in the 38 perineal operations there were 4 deaths; a total of practically 24 per cent. of fatalities for all operations, and a fatality of nearly 46 per cent. in the suprapubic cases and 10.6 per cent. for the 38 perineal cases. Of the 47 patients who recovered, there were 42 perfect functional results. Of the five imperfect functional results, one patient had a permanent abdominal sinus, this, of course, being a case of suprapubic operation. Two other suprapubic patients required secondary operation for closure of abdominal sinuses, this procedure giving final perfect result, and so are classed with the 42 functional cures. Of the 5 imperfect results, 2 patients had slight, but permanent, perineal sinuses, leaking occurring only at time of urination. Both, however, were in cases of malignant disease of the prostate. One had rectal

fistula, this also a malignant case. One perineal patient at last report had a partial incontinence of urine, and this was the only nonmalignant case of the perineal service that failed of perfect functional result. In the patients that recovered there were 2—1 perineal and 1 suprapubic—that suffered with very severe infection following the operation. One perineal patient had a severe hemorrhage into the bladder, the blood clotting and giving much difficulty in emptying it, but made final complete recovery. One perineal patient had extensive scrotal infiltration with urine, which persisted for some weeks. One had late stricture, which was permanently relieved by passing sounds. Two patients in the course of recovery developed orchitis of brief duration. Of the 15 cases of death 2 were from exhaustion; 1 patient died of pulmonary embolism forty days after operation, but having a sinus not quite healed; 2 died of suppression of urine and resulting uremia; 3 died of mixed pyogenic infections and 1 of tetanus; 3 died promptly after operation, and are credited to surgical shock; these three were suprapubic operations; 1 died of hemorrhage a week after operation—a suprapubic case; 1 patient a perineal case, appeared to die of dynamic ileus or intestinal stasis; 1 died of persistent vomiting that came on ten days after operation, and the whole clinical picture was that of cancer of the stomach with pyloric stenosis.

19. **Method of Supporting Bladder in Certain Cases of Cystocele.**—Smith's method consists in attaching the uterus to the posterior inferior surface of the bladder, the cervix being sutured firmly to the posterior wall of the urethra, just above and behind the meatus. By this maneuver the bladder pouch is tucked up into the pelvis, and the bladder as a whole rests on the anterior wall of the uterus as on a shelf.

22. **Variations in Pulmonary Resonance.**—According to Shattuck, slight differences in pulmonary resonance below the clavicles in front, and at the apices and bases behind, are common in chests which can properly be regarded as negative from a clinical standpoint. These differences are ordinarily disregarded. They are important when, for other reasons, the existence of pulmonary disease is suspected. Under these conditions they may lead the examiner to believe the disease is more extensive than it is, or they may be a factor in causing him to make diagnosis of phthisis when it does not in fact exist. Shattuck has seen many cases in which the diagnosis of phthisis has been made on insufficient evidence, with resulting hardship to the patient, and the variations of resonance mentioned may have led to errors in this direction. On the other hand, he emphasizes that the variations of resonance are slight, and that the importance of well marked dulness for diagnosis is not in question.

23. **Variations in Pulmonary Voice Sounds.**—The spoken and whispered voice, Reid says, though most often louder at the right apex, is not necessarily so in chests that are clinically negative. The left base may transmit the spoken voice louder in a surprising number of cases. The variations in pulmonary voice sounds do not follow with any degree of accuracy those in pulmonary resonance, save over the right apex. The transmission of the spoken and whispered voice over normal chests presents considerable variation, and this should be clearly appreciated in drawing conclusions as to the presence of pathologic conditions, such as pulmonary tuberculosis, etc.

### Cleveland Medical Journal

*March, XVI, No. 3*

24 Pulmonary Syphilis; Report of Case. R. Dexter, Cleveland.—p. 147.
25 Use of Blood Transfusion. A. B. Eisenbrey, Cleveland.—p. 155.
26 Abdominal Tumor (Papilloma of Ovary) of Unusual Size (180 Pounds). W. E. Lower, Cleveland.—p. 161.
27 Relation of Syphilis to Mental Disease. A. G. Hyde, Cleveland.—p. 163.
28 Influence of Force of Gravity on Circulation. R. J. Schraff, Cleveland.—p. 170.

### Indiana State Medical Association Journal, Fort Wayne

*April, X, No. 4*

29 *Occlusive Drainage for Empyema of Chest, Demonstration of Operation and Instruments. M. I. Rosenthal, Fort Wayne.—p. 135.
30 Roentgen Ray Diagnosis of Mastoid Disease. A. M. Cole, Indianapolis.—p. 139.
31 Infections of Mastoid; Roentgenography and Other Aids to Early Diagnosis. W. F. Clevenger, Indianapolis.—p. 140.
32 Errors in Diagnosis of Diseases of Accessory Sinuses. J. Maurer, Marion.—p. 143.

29. Abstracted in THE JOURNAL, Oct. 21, 1916, p. 1251.

### Iowa State Medical Society Journal, Des Moines

*April, VII, No. 4*

33 Hematoma of Abdominal Wall Simulating Intra-Abdominal Accident. W. M. Shirley, Carroll.—p. 138.
34 Fractures of Os Calcis. P. A. Bendixen, Davenport.—p. 140.
35 Case of Complete Circumflex Paralysis. A. M. Evetz.—p. 143.
36 Continuous Sponge. C. A. Boice, Washington.—p. 145.
37 Present Day Surgery of Abdomen. D. W. Ward, Oelwein.—p. 149.
38 Four Cases of Status Epilepticus Treated with Success. W. Held, Chicago.—p. 151.
39 Facts, Fads and Fancies Relative to Medical Practice. P. R. Wood, Cedar Falls.—p. 152.
40 Exhibition Clinical Eye Case. G. F. Harkness, Davenport.—p. 154.

### Journal of Laboratory and Clinical Medicine, St. Louis

*April, II, No. 7*

41 Calcium Sulphid, as Chemical and Clinical Antidote for Mercuric Chlorid Poisoning, with Experiments; Report of Case. J. H. Wilms, Cincinnati.—p. 445.
42 Preliminary Medical Study of Positive Cases Found in First Year's Work of Michigan Tuberculosis Survey. V. C. Vaughan, Jr., Detroit.—p. 459.
43 Spirochetes. H. Noguchi, New York.—p. 472.
44 *Effect of Extensive Venesection and Transfusion on Kidney Lesions in Severe Acute Mercuric Chlorid Poisoning. W. H. Burmeister, Chicago.—p. 500.
45 Recent Advances in Study of Autolysis. M. Morse, Chicago.—p. 506.
46 Pernicious Vomiting without Acidosis Associated with Disturbance of Ammonia Urea Quotient of Blood. H. L. McNeil and M. D. Levy, Galveston, Texas.—p. 509.
47 Use of Fehling's Solution in Determination of Blood Sugar. H. McGuigan, Chicago.—p. 514.
48 Preservation of Erythrocytes of Known Group for Iso-Agglutinin Group Determination. M. G. Wohl, Omaha.—p. 516.
49 Construction of Apparatus Using Structural Steel Toy. S. B. Kleiner, New Haven, Conn.—p. 517.
50 Clarification of Complement in Relation to Its Preservation. N. E. Williamson, Stockton, Calif.—p. 518.

44. **Effect of Venesection and Transfusion on Kidney Lesions.**—Copious venesection followed by transfusion of normal blood according to Burmeister inhibits both qualitatively and quantitatively the characteristic degeneration usually found in the epithelium of the ascending loop of Henle in the kidneys of dogs acutely poisoned by mercuric chlorid. In desperate and other cases of acute mercurial poisoning, venesection followed by transfusion should be practiced in addition to other therapeutic measures now in use. In this way metallic mercury can be removed in vitro from the blood of animals poisoned by mercuric chlorid and this blood qualitatively freed from its corrosive contamination can again be utilized in subsequent transfusions.

### Journal of Nervous and Mental Disease, Lancaster, Pa.

*April, XLV, No. 4*

51 *Anatomic Findings in Case of Progressive Lenticular Degeneration. J. A. F. Pfeiffer, Washington, D. C.—p. 289.
52 Mechanism of Paranoia. E. S. Abbot, Waverly, Mass.—p. 312.
53 Dynamic Psychology and Practice of Medicine. H. D. Singer, Hospital, Ill.—p. 324.
54 *Symptom Complex Associated with Interpeduncular Tumors. H. I. Gosline, Worcester, Mass.—p. 337.

51. **Progressive Lenticular Degeneration.**—The case reported by Pfeiffer presented the essential aspects of the disease described by Wilson as progressive lenticular degeneration. The anatomic changes found are analogous with those described by Wilson. The basal ganglions were most severely diseased, especially that portion of the lenticulate nucleus known as the putamen, in which area an extensive destruction and softening of the tissue occurred. The remaining part of the lenticulate nucleus, and the caudate nucleus, were less severely affected, and the alterations in the cortex were not intense. The pathologic changes were characterized by a degeneration of the neuronic elements, with a compensatory proliferation and hyperplasia of the glial tissue. Many singular morphologic gliogenous variations were exhibited. No evidence of inflammation or pathologic vascular alterations were discovered.

54. **Symptom Complex of Interpeduncular Tumors.**—Gosline cites the case of a man of 30 years who had active symptoms of eight months' duration characterized by drowsiness of such persistence that he lost various positions. He died with signs of interpeduncular tumor. The tumor was made up of undifferentiated anterior lobe cells such as are found in the hibernating animal, and a correlation is suggested between tumors of this sort and the possibility of human hibernation. There was a high incidence of twins in the immediate family of the patient. His organs showed fetal lobulations and other variations from the normal.

### Medical Record, New York

*April 28, XCI, No. 17*

55 Biopsy and Cancer—Review. W. S. Bainbridge, New York.—p. 705.
56 Intravenous and Intraprostatic Injections of Methylphenol and Normal Phenol Serum in Gonorrhea. F. G. Cano, San Salvador, T. M. Townsend and J. J. Valentine, New York.—p. 715.
57 Radium Dosage. J. B. Bissell, New York.—p. 720.
58 Acute Pancreatitis. L. H. Levy, New Haven, Conn.—p. 721.
59 Anxiety About Lumbar Puncture. L. Newmark and W. F. Beerman, San Francisco.—p. 723.
60 Plan for Prevention of Venereal Disease in Our Military Forces. A. L. Wolbarst, New York.—p. 725.

### Mental Hygiene, Concord, N. H.

*January, I, No. 1*

61 Wider Field of Work of National Committee for Mental Hygiene. L. F. Barker, Baltimore.—p. 4.
62 Underlying Concepts in Mental Hygiene. W. A. White, Washington, D. C.—p. 7.
63 Unemployment and Personality—Study of Psychopathic Cases. H. M. Adler, Boston.—p. 16.
64 Insane in County Poor Farm. T. W. Salmon, New York.—p. 25.
65 Growth of Provision for Feebleminded in United States. W. E. Fernald, Waverly, Mass.—p. 34.
66 Mental Adaptation. F. L. Wells, Waverly, Mass.—p. 60.
67 Organized Work in Mental Hygiene. C. W. Beers.—p. 81.
68 What State Hospital Can Do in Mental Hygiene. W. L. Russell, White Plains, N. Y.—p. 88.
69 Subnormal Child—Survey of School Population in Locust Point District of Baltimore. C. M. Campbell, Baltimore.—p. 96.

### Missouri State Medical Association Journal, St. Louis

*April, XIV, No. 4*

70 Discussion on: Should Asymptomatic Individual with Positive Wassermann Be Treated? M. E. Engman, St. Louis and others.—p. 145.
71 Blastomycosis; Report of Three Cases. W. Frick, Kansas City.—p. 158.
72 Medical Education in Missouri an Ideal. F. G. Nifong, Columbia.—p. 161.
73 Tonsils and Adenoids. J. P. McCann, Warrensburg.—p. 164.
74 Relation of Nasal and Oral Sepsis to Systemic Disease. T. A. Blackmore, Windsor.—p. 166.
75 Everyday Use of Bacterins. C. F. Briegleb, St. Clair.—p. 170.
76 Magnesium Oxid in Treatment of Mercury Poisoning; Report of Cases. E. Schisler, St. Louis.—p. 173.

### New York Medical Journal

*April 28, CV, No. 17*

77 Pneumococcic Peritonitis in Infancy and Childhood. I. A. Abt, Chicago.—p. 769.
78 Some Problems of Differential Diagnosis in Chronic Pulmonary Disease. J. A. Miller, New York.—p. 773.
79 Channels of Infection and Methods of Transmission of Tuberculosis. W. H. Park, New York.—p. 777.
80 Nonsurgical Cures of Exophthalmic Goiter. I. Bram, Philadelphia.—p. 778.
81 Value of Early Vaccine Treatment of Pneumonia. G. H. Sherman, Detroit.—p. 781.
82 Circumcision of Tonsil. F. G. Murphy, Mason City, Iowa.—p. 785.
83 Obstetric Paralysis; Review of Its Mechanism and Outlook for Its Relief. H. W. Wright, San Francisco.—p. 788.
84 Municipal Birth Control Clinic. M. H. Kahn, New York.—p. 790.

### Pennsylvania Medical Journal, Athens

*April, XX, No. 7*

85 Disposition of Ligaments in Hysterectomy. S. E. Tracy, Philadelphia.—p. 461.
86 *Conservative Treatment of Puerperal Sepsis. E. E. Montgomery, Philadelphia.—p. 465.
87 *Roentgenotherapy in Gynecology. F. E. Keene, Philadelphia.—p. 469.
88 *Attitude of Department of Labor and Industry Toward Problem of Occupational Diseases. J. P. Jackson, Harrisburg.—p. 472.
89 Cranial Nerve Syphilis; Technic of Treatment. F. Eastman, Erie.—p. 478.
90 Use of Prisms in Ophthalmic Practice. J. E. Willetts, Pittsburgh.—p. 483.
91 Use of Ethylhydrocuprein in Diseases of Eye. W. Zentmayer, Philadelphia.—p. 487.
92 Symptoms of Empyema of Maxillary Sinus; Simple Operative Method for Its Relief. J. J. Sullivan, Jr., Scranton.—p. 491.
93 Status of Lingual Tonsil and Its Surgery. J. A. Babbit, Philadelphia.—p. 495.
94 Exaggerated Importance of Blood Pressure. R. Parker, Norristown.—p. 503.
95 Industrial Injuries to Eyes. W. C. Posey, Philadelphia.—p. 504.
96 Treatment of Acute Anilin Poisoning and Various Derivations Incident to Its Manufacture. J. C. Lyons, Marcus Hook.—p. 509.
97 Vesical Calculus Incarcerated in Vagina. E. Lyon, Williamsport.—p. 510.
98 Case of Mercurial Poisoning. F. L. Marsh and W. A. Marsh, Mount Pleasant.—p. 510.

86. Abstracted in THE JOURNAL, Nov. 4, 1916, p. 1396.
87. Abstracted in THE JOURNAL, Oct. 28, 1916, p. 1328.
88. Abstracted in THE JOURNAL, Nov. 4, 1916, p. 1394.

### Rhode Island Medical Journal, Providence

*April, I, No. 4*

99 Industrial Accident Compensation Legislation; Medical Phase. F. I. McCanna, Providence.—p. 83.
100 Decadence in Medical Economics. W. L. Harris, Providence.—p. 92.
101 Case of Gangrenous Arthritis of Knee of Diabetic Origin. J. C. Rutherford, Providence.—p. 98.

### Surgery, Gynecology and Obstetrics, Chicago

*May, XXIV, No. 5*

102 *Hypospadias and Its Treatment; a New Operation. C. Beck, Chicago.—p. 511.
103 *Pernicious Anemia with Special Reference to Its Surgical Management. N. M. Percy, Chicago.—p. 533.
104 Cancer of Large Bowel. G. E. Armstrong, Montreal, Canada.—p. 545.
105 Cancer of Stomach. C. H. Peck, New York.—p. 549.
106 Cancer of Breast. W. Meyer, New York.—p. 553.
107 *Transplantations of Ectopic Pregnancy from Fallopian Tube to Cavity of Uterus. C. J. Wallace, Duluth, Minn.—p. 578.
108 Present Status of Roentgenotherapy in Management of Deep-Seated Malignancy. J. T. Case, Battle Creek, Mich.—p. 580.
109 Present Status of Roentgenology in Management of Deep-Seated Malignancy. G. E. Pfahler, Philadelphia.—p. 588.
110 Hernia Through Triangle of Petit; Report of Case. J. H. Rishmiller, Minneapolis.—p. 589.
111 Sterility in Female. M. T. Goldstine, Chicago.—p. 592.
112 Sterility in Male. L. E. Schmidt, Chicago.—p. 594.
113 Id. V. D. Lespinasse, Chicago.—p. 597.
114 *Tuberculosis of Spine; End Results of Operative Treatment. M. S. Henderson, Rochester, Minn.—p. 600.
115 *Carcinomatous Ovarian Teratoma with Premature Puberty and Precocious Somatic Development. R. H. Harris, Battle Creek, Mich.—p. 604.
116 *Operative Treatment of Pes Cavus; Stripping of Os Calcis. A. Steindler, Iowa City, Iowa.—p. 612.
117 Unique Case of Injury of Elbow Joint. P. W. Davis, Portland, Maine.—p. 615.
118 Lateral Double Loop Suture for Fatty or Infected Abdominal Walls. A. Schwyzer, St. Paul.—p. 617.
119 External Urethrotomy; Its Technic. J. F. McCarthy, New York.—p. 619.
120 *Plastic Operation on Fallopian Tubes for Production of Temporary Sterility. C. Culbertson, Chicago.—p. 622.
121 Conduct of Third Stage of Labor. H. K. Gibson, Chicago.—p. 625.

102. **Hypospadias and Its Treatment.**—Beck's method is a flap method with the extensive use of the prepuce. He has observed fifteen cases for a period of from one to eight years each. They have been almost normal in appearance and function.

103. **Pernicious Anemia and Its Surgical Management.**—Percy has operated in thirty-seven cases of pernicious anemia, but this report includes only the first twenty-four cases, in which the elapsed interval since the operation has been six months or more. The regions in which foci were found were the gallbladder, the appendix, and the mouth and throat. In twenty of the twenty-four cases, chronic cholecystitis, with or without stones, was present, seventeen of which also presented evidence of previous inflammation of the appendix, and six of this group also had marked infection in or about the teeth, and one had infected tonsils. Four cases had marked evidence of a subacute infection in the appendix. In one patient the only focus found was in the teeth. From the last nine cases bacteria were grown from three of the nine spleens removed, from four of the seven gallbladders removed, and from six of seven appendixes removed. The only case not giving a bacteriologic growth, was one in which the spleen

was the only specimen removed, the appendix having been previously removed. This patient had had a long standing pyorrhea, for the relief of which a number of teeth had been extracted. No culture was made from the mouth. The predominating micro-organism found was the hemolytic streptococcus, being obtained in seven of the nine cases, the colon bacillus in five, the *Streptococcus viridans* in four, the *Staphylococcus albus* in one.

Splenectomy, cholecystectomy and appendectomy were done in seventeen cases; splenectomy, cholecystostomy and appendectomy in one case; splenectomy and cholecystectomy in two cases; splenectomy and appendectomy in three cases; splenectomy alone in one case. In this one several teeth were extracted later, as well as the tonsils removed in one other case. Teeth were also extracted in five other cases. Transfusion was done routinely on the table immediately at the close of each operation. There were two operative deaths; 8.3 per cent. One of these patients died on the twelfth day from uremia, the other about sixteen hours after operation, apparently from some form of blood crisis beginning about five hours after operation. One patient showed practically no improvement, but had relief from mental and gastric symptoms for four weeks, at the end of which time the symptoms recurred, the spinal cord symptoms progressed rapidly, and the patient died at the end of ten weeks. The other twenty-one, or 87 per cent., were markedly improved. Two patients had recurrence of symptoms at the end of four months, death at eight months. One died from an accident four months after operation, with blood count nearly 5 million. Four patients had recurrence of symptoms just about six months after operation; interval of these now since operation, eight, nine, ten and eleven months, respectively. The other fourteen, or 58 per cent., are all clinically in good condition, the interval since operation being as follows; three about seven months; two, eight months; two, nine months; one, ten months; one, fourteen months; two, fifteen months; one, eighteen months; one, twenty-three months, and one, thirty-two months. This latter case, at the end of two years and eight months is clinically perfectly well and carries no evidence of pernicious anemia in her blood, except that an occasional normoblast can be found. In every case except one in which recurrence of the disease has occurred, the patient presented mental, nervous or spinal cord symptoms at the time they came under treatment, and in most of them, these symptoms occurred early in the disease. From observations of these cases it would seem that in all cases of pernicious anemia with involvement of the spinal cord and central nervous system, the prognosis is extremely bad under any form of treatment, and the patients should not be operated on."

107. **Transplantation of Ectopic Pregnancy.**—In an early case in which the tube is still in a healthy condition, not too badly distended, and all things favorable, Wallace thinks a supreme attempt should be made to save the life of the growing child by opening the tube carefully and dissecting out the pregnancy intact and transplanting it into the uterus. This can be very quickly done. It does not endanger the life of the mother and may be her only chance to bear a child. In support of this theory Wallace reports a case which will show without doubt that it can be done. The pregnancy went on normally to full term and resulted in the natural birth of a fully developed child.

114. **Tuberculosis of Spine.**—In the Mayo Clinic, from July, 1912, to July, 1916, 274 cases of tuberculosis of the spine were observed. Eighty-one patients were operated on, seventy-four according to the method of Albee and seven according to the method of Hibbs. The oldest patient was 53, the youngest 2. Only seven were under 12 years of age. The disease was located in the lumbar region in thirty-four instances, in the dorsal in thirty-six and in the dorsolumbar in eleven. The average duration of symptoms was two years and six months. There were no deaths due to the operation. Seven patients of the series are known to have died some time after the operation. Seventy-three cases, therefore, are the basis of Henderson's percentages. Thirty-one patients (42.4 per cent.) are cured. Thirty-three patients (45.2 per cent.) are classified as relieved, though no doubt some of this group will go on to a cure when sufficient time has elapsed. Although there were no operative deaths, seven of the seventy-three patients (9.5 per cent.) are known to have died later; two of these had been cured of the tuberculosis of the spine. Henderson concludes that neither the Hibbs nor the Albee type of operation for ankylosing the diseased area in tuberculosis of the spine is in any sense a radical operation for extirpation of the focus of disease. Patients submitted to these procedures should be in good general condition. Paraplegia per se is not a contraindication. These procedures in themselves are not serious. A proper selection of patients will give a high percentage of cure and considerably shorten the period of treatment.

115. **Carcinomatous Ovarian Teratoma.**—Harris' patient was only 5 years and 10 months old. The growth of the tumor was associated with the beginning of puberty at 5 years of age and with rapid bodily development. The tumor was a complex cystosolid teratoma with definite adenocarcinomatous areas. There has been no menstruation since the removal of the tumor, and no further precocious growth. The first menstrual period appeared when the patient was 5 years old. The second period began two months later and was followed at regular intervals of four weeks by five other menstrual periods. Each period lasted one week, and was accompanied by profuse menstrual flow and by pain in the lower abdomen. The physical changes usually observed at puberty began to be noticed soon after the first menstrual period. The breasts grew larger, the areolae darkened, the pubic region became covered with dark brown hair, hair appeared in the axillae, and the whole body developed rapidly. The growth of the ovarian tumor was well advanced by the time of the third menstrual period, seven months before operation, when its presence was discovered by the family physician. There was no discoverable recurrence when the patient was examined thirty months after removal of the tumor.

116. **Operative Treatment of Pes Cavus.**—The lower surface of the os calcis is stripped by Steindler entirely to its anterior edge where the short flexors of the toes and the abductors of the first and fifth toes are inserted together with plantar fascia.

120. **Plastic Operation to Produce Temporary Sterility.**—The procedure described by Culbertson involves the fimbriated end of the tube only, and is performed by transposing the infundibulum beneath the round ligament into the anterior culdesac, and then closing off the anterior culdesac by a transverse ventrosuspension of the uterus, employing the round ligaments throughout their entire length, from the inguinal ring on one side to the inguinal ring on the other.

### Tennessee State Medical Association Journal, Nashville

*April, IX, No. 12*

122 Trend of Times in Medicine and Surgery. C. N. Cowden, Nashville.—p. 463.
123 Trachoma. A. F. Richards, Sparta.—p. 470.
124 Tubercular Peritonitis. R. A. Barr, Nashville.—p. 477.
125 Hernia. E. H. Baird, Dyersburg.—p. 481.

### Vermont Medicine, Rutland

*April, II, No. 4*

126 Tardy Pain of Stomach. A. H. Bellerose, Rutland.—p. 85.
127 Hernia of Urinary Bladder. A. P. Heineck, Chicago.—p. 92.

### West Virginia Medical Journal, Huntington

*March, XI, No. 9*

128 Aggravated Coryza—So-Called Grippe. G. A. Aschman, Wheeling.—p. 313.
129 Pathogenesis of Some Nonpsychogenetic Types of Functional Nervous Disorders. T. A. Williams, Washington, D. C.—p. 316.
130 Roentgen Rays in Diagnosis. W. C. Moser, Morgantown.—p. 320.
131 Study of Arsenic Compounds in Chemotherapy of Tuberculosis. A. Arkin, Morgantown.—p. 329.

*April, No. 10*

132 Prodigal Sister. W. C. Slusher, Bluefield.—p. 353.
133 Indications for Operation in Head Injuries. A. McGlannan, Baltimore.—p. 355.
134 Case of Multiple Fibrocystic Tumor of Endometrium. A. S. Grimm, St. Marys.—p. 357.
135 Report of Several Cases, Showing Results Obtained in Treating Pathologic Lesions of Deep Male Urethra with Aid of Modern Urethroscope. O. D. Barker, Parkersburg.—p. 358.
136 Methods and Results in Surgery of Stomach and Intestine. G. W. Crile, Cleveland.—p. 365.

## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### Edinburgh Medical Journal

*April, XVIII, No. 4*

1 *Fragilitas Ossium and Its Association with Blue Sclerotics and Otosclerosis. E. Bronson.—p. 240.
2 Two Cases of Congenital Superior Radio-Ulnar Synostosis. D. M. Greig.—p. 281.
3 Laparotomy under Local Anesthesia. J. M. Graham.—p. 284.

1. **Fragilitas Ossium.**—A description is given by Bronson of two families with hereditary fragility of the bones associated with gray-blue sclerotics, and in one family with otosclerosis also. A summary of the literature of these peculiarities in relation to fragilitas ossium is presented, together with a general discussion of the whole subject, case reports of the congenital type, and a bibliography. In the first family, consisting of fifty-five individuals in four generations, twenty-one had gray-blue sclerotics. Of these twenty-one, only one, a 6 year old boy, who survived infancy, has had no fractures. The number of fractures in any individual is not excessive, and they require a certain amount of force for their production. Sprains and dislocations are also common. The majority of adults are in good general health, and are able to do ordinary work. The mortality among infants with blue sclerotics is in this family greater than among those not affected. The heads of those individuals in this family who have blue sclerotics and bone fragility show an abnormal prominence of the frontal and occipital bones. In two of them there is a history of patency of the fontanel throughout life. Of eight adults with blue sclerotics and fractures, seven had varying degrees of deafness, the eighth died at 23 without deafness. In the second family, consisting of eight individuals in three generations, seven have blue sclerotics, and four of these have had fractures; two others have a tendency to sprains. All are able to lead an ordinary life, except one child, which is somewhat crippled and incurs fractures too easily to be able to run and play. In this family the head has the characteristic shape frequently seen in osteogenesis imperfecta congenita, namely, increase in the bitemporal diameter, so that the ears are turned outward and downward, slight downward tilting of the axis of the eyes, and an underhung lower jaw. There is no tendency, as in the first family, to deafness, nor any to arterial sclerosis. In both families the stature of those affected is below the average, with the exception of three members of the first family.

### Indian Medical Gazette, Calcutta

*March, LII, No. 3*

4 Gunshot Wounds of Abdomen (During Siege of Kut). C. H. Barber.—p. 81.
5 Cataract Operation Old and New. M. Corry and R. H. S. Bahadur. —p. 90.
6 Influence of Beriberi on Body Weight. J. Mulvany.—p. 98.
7 Surface Tension and Wassermann Reaction. V. Nesfield.—p. 99.
8 Prevention of Sepsis in Cataract Extraction. H. Herbert.—p. 100.

### Journal of Tropical Medicine and Hygiene, London

*April 2, XX, No. 7*

9 Disposal of Town Refuse. J. T. Clarke.—p. 73.

### Lancet, London

*April 14, I, No. 4885*

10 War Surgery of Abdomen. C. Wallace.—p. 561.
11 Importance of Diagnosis of Enteric Fevers by Agglutinin Determinations. E. W. A. Walker.—p. 568.
12 *Easy and Rapid Method of Detecting Protozoal Cysts in Feces by Means of Wet-Stained Preparations. R. Donaldson.—p. 571.
13 *Toxic Symptoms After Use of Bismuth Paste. F. A. Hepworth. —p. 573.
14 Relation of Structure to Function as Seen in Mechanism of Venous System. F. W. Jones.—p. 574.
15 Immediate After-Treatment of Guillotine Amputation Stump. H. F. Woolfenden and J. Campbell.—p. 576.

12. **Detection of Protozoal Cysts in Feces.**—A mixture of equal parts of the two stains used in any of the three following combinations Donaldson found will yield the best results. A. Five per cent. aqueous solution of potassium iodid saturated with iodin to which is added an equal volume of ether. B. (1) A saturated aqueous solution of rubin S; or (2) a saturated aqueous solution of eosin; or (3) Stephens' scarlet writing fluid. A few loopfuls of one of the above stain combinations are placed on a clean slide, a loopful of feces taken and rubbed up with the stain to form a fairly smooth suspension, and a clean cover slip gently lowered over the drop. The cysts stand out as brilliant yellow or greenish-yellow spheres, which even the veriest tyro cannot miss seeing. Such cysts have a very sharply defined outline which in the case of coli and histolytica cysts appears, in the rubin S combination, using daylight as the illumination, as a sharp deep purple ring. In the case of other cysts this well recognized outline is not so deeply colored, although it is still tolerably sharp. The nuclear structures in the cyst stand out as prominently as with the old simple iodin method. In cases in which the light is too strong, it may be necessary to close the iris diaphragm slightly to bring the nuclei into relief.

13. **Toxic Symptoms After Use of Bismuth Paste.**—Five men were found by Hepworth to show symptoms suggesting plumbism, and although under the care of different surgeons and in different wards, all alike suffer from severe septic wounds and all were treated by the application of bismuth and iodoform paste, according to Morison's technic.

### Bulletin de l'Académie de Médecine, Paris

*April 3, LXXVII, No. 14, pp. 425-480*

16 *Prophylaxis of Syphilis. Gaucher and others.—p. 433.
17 The Fissured or Grooved Tongue as Sign of Syphilis. (La langue fissurée ou fendillée, son origine syphilitique ou hérédo-syphilitique.) Gaucher.—p. 437.
18 *The Hygienic Meal. (Des repas à 2 plats et 2 desserts devant l'hygiène.) E. Maurel.—p. 442.
19 Oil-Ether Mixture for Dressing Wounds. G. Duchesne.—p. 451.
20 *System of Writing for the Blind. A. Cantonnet.—p. 453.
21 Apparatus for Compound Fracture of the Long Bones. Prat and P. Reynier.—p. 459.

16. **Prophylaxis of Syphilis.**—The Académie adopted the following six resolutions presented by a committee headed by Gaucher: "The Académie, alarmed by the rapid progress of syphilis, insists with emphasis: 1. On the necessity for letting young men know that chastity is not only possible but recommendable and salutary, and letting married men know that it is their duty from the point of view of morality and of hygiene to avoid chance intercourse. 2. On the absolute necessity for medical examination of military contingents and laborers from the colonies, before they embark for France, and also after their arrival in France, and for medical inspection of colonial workmen every fortnight in the factories where they are employed. 3. On the necessity for strict observance by the police of the ordinances relating to hotels and furnished rooms. The proprietors must insist on the tenants registering their name and civil position whether they rent a room for the night or even during the day. 4. On the necessity for strict enforcement of the ordinances against soliciting and severe repression of the penal offense *racolage* (crimping). 5. On the necessity for informing men who might succumb to temptation that it is indispensable for them to use preventives. 6. On the absolute necessity for entrusting the diagnosis and treatment both in military and civilian circles exclusively to physicians known to be competent, and on the necessity for extension of training in syphilography." In speaking to the question before the vote, Gaucher related a number of instances where men with various other skin affections had been erroneously treated for syphilis. One soldier with scabies for more than a year had spent three months of the year in the hospital, taking treatment for non-existent syphilis, and returned to his service with his still unrecognized, untreated and uncured scabies. In another instance, typical recent syphilis in a prostitute long escaped detection under weekly medical inspections.

18. **The Hygienic Meal.**—Maurel for some years has been affirming that the general health would be better if the average healthy adult would confine himself to two dishes at noon and eve, one from the animal and one from the vegetable kingdom, with two desserts, balanced in the same way, fruits from the vegetable kingdom and cheese, creams, etc., from the animal. With soup at one meal and 350 gm. bread during the day this ration represents 2,445 calories, 35 per kilogram. He gives a menu showing the variety that can be secured with this ration, and compares it with orders recently issued by the

authorities in France forbidding all hotels, restaurants, diners and other public eating places from serving more than two dishes at a meal, one of meat, with soup, one entrée, cheese and one dessert dish. Cooked or raw vegetables are to be counted as a dish when they are served separately, not as garnishes. The bill of fare for one meal must not comprise more than two soups and nine dishes, namely, one dish of eggs, and choice from two dishes of fish, three dishes of meat, and three dishes of vegetables. The menu each day has to be submitted to the officials if required. Maurel declares that these new regulations, which went into effect in February, are directly in line with what he has been advocating for some years as the rational and hygienic table.

20. **Writing for the Blind.**—The advantage of the method described by Cantonnet is that it can be read by those who see as well as by the blind. The letters are punched dots, but they are arranged in the shape of the ordinary capitals and are thus easily read by anyone. They are punched through a tin ruler which has two rows of slits arranged in groups of three, and the dots are punched through these slits. The letter H, for example, is made with three dots in each of the outer slits and one dot in the center of the middle slit. If a carbon paper is placed under the writing paper, the punched through dots show up plainer. They can be read from the dots or by holding the back of the paper in front of a mirror. Samples of the writing are given, and an illustration of the tin ruler with its two rows of sixteen groups of slits; thirty-two letters can thus be written before the ruler has to be moved down. The method does not compete with the Braille, but supplements it by providing a means of communication with the seeing.

## Paris Médical

*March 24, VII, No. 12, pp. 229-244*

22 The Auscultation Method of Using the Sphygmomanometer: Technic and Findings. L. Tixier.—p. 229.
23 Treatment on the Firing Line of Wounds of the Chest. Schwartz.—p. 235.
24 *Camphor Treatment of Trench Foot. (Pied de tranchée.) V. Raymond and J. Parisot.—p. 238.
25 Training the Crippled by Outdoor Games and Sports. Moreau-Defarges.—p. 241.

*March 31, No. 13, pp. 245-260*

26 Electrodiagnosis in War. J. Cluzet.—p. 246.
27 Medicated Paraffin Film Treatment for Frostbite and Burns. (Traitement des "gelures des pieds" et des brulures.) F. Rathery and L. Bauzil.—p. 249.
28 *Localized Muscular Rigidity as Sign of Impending Gangrene. (Le signe de Prat.) J. Fiévez.—p. 250.
29 *Continuous Aspiration in Treatment of Infected Wounds. A. Grimberg.—p. 253.

24. **Treatment of Trench Foot.**—Raymond and Parisot state that further experience has confirmed their assumption that the so-called trench frostbite is an infection from some fungus germs, normally in the soil, which acquire pathogenic properties for man under long standing in cold water. Similar affections can be induced in animals by submitting them to stagnation and wet cold. Conditions are like those in Pasteur's experiments with chilled hens. Treatment based on this etiology has given good results, especially dressing the foot with cotton dipped in a mixture of 1.1 gm. pulverized camphor; 15 gm. sodium borate and 1,000 gm. boiled water. Among the 1,093 cases in Africans, October to January, there were four deaths from septicemia or tetanus, but 95 per cent. were cured without a mutilating operation. Of the 232 Arabs, none died and 95 per cent. were cured without an operation. Of the 891 French soldiers, all but fifty returned to active service in from three to five weeks and only five required an operation. Only two had to be discharged from active service.

28. **Sign of Impending Gangrene.**—Prat has called attention to a peculiar rigidity in the muscles after an injury of the limb which he says is a warning of impending gangrene. Fiévez reports several cases in which this sign: hardness of the leg below traumatic injury, persisted until gangrene developed. It is evidently a sign of ischemia, and the ischemia is the result of injury of some large blood vessel above. Necrosis and gangrene almost inevitably follow this muscular rigidity ischemia, and the board-like hardness of the muscles is their precursor. It consequently should turn the scale in favor of amputation in doubtful cases. Theoretically, this pregangrenous ischemic rigidity is capable of retrogression, but in reality it must be regarded as an actual segmental cadaveric rigidity. Conservative surgery is perilous in these conditions. The rigidity further serves to limit the doomed from the sound muscles or group of muscles.

29. **Aspiration Treatment of Wounds.**—Grimberg introduces the rinsing fluid (Dakin solution) into the wound in a continuous flow and aspirates it below by the simple device of a jar with the tube entering the stopper and a tube and faucet below. As the fluid in the jar flows off through the lower tube, the vacuum left aspirates the fluid in the wound. The ends of the tubes in the wound are wrapped with cotton and gauze, tied in place, and the aspiration continues automatically for hours at a time.

## Presse Médicale, Paris

*March 15, XXV, No. 16, pp. 153-160*

30 *Importance of Oxygen in Treatment of Carbon Monoxid Poisoning. (L'instabilité de l'hemoglobine oxycarbonée en présence d'oxygène.) M. Nicloux.—p. 153.
31 The Lesions in Rectum and Colon with Amebic Dysentery. J. Carles and Froussard.—p. 154.

*March 22, No. 17, pp. 161-176*

32 Primary Malaria in Macedonia and Treatment. P. Abrami.—p. 161.
33 *Abscesses and Eschars from Subcutaneous Injections of Quinin. L. Moreau.—p. 164.
34 Perforation by Scrap of Shell of Stomach Protruding through a Congenital Hernia of the Diaphragm. S. Mercadé.—p. 166.
35 *Barium Sulphate in Gelatin for Roentgen Work. R. Bensaude and M. Terry.—p. 168.
36 *Molar Tooth Sign of Inherited Syphilis. R. Sabouraud.—p. 169.

30. **Treatment of Carbon Monoxid Poisoning.**—Nicloux is professor of chemistry at the University of Paris. He here reiterates that the traditional idea that a red corpuscle once choked with carbon monoxid is a dead corpuscle, is no longer tenable. The corpuscle is not dead; all it needs is oxygen under sufficient tension to displace the carbon monoxid in it. His research has demonstrated that 1 volume of carbon monoxid acts like 220 volumes of oxygen. Hemoglobin in contact with one part carbon monoxid in 220 parts oxygen, takes up equal parts of each, half of the hemoglobin becoming oxygenated, the other half carbon monoxidated. Air contains only 21 per cent. oxygen, so that the proportion would have to be 1:1,000 when air instead of pure oxygen is used. The practical conclusions from the data presented are that when a person suffering from carbon monoxid poisoning is made to breathe pure oxygen as soon as possible, actual resurrection may ensue. In animals deeply intoxicated with carbon monoxid, nearly the whole had disappeared from the blood by the end of an hour of oxygen breathing.

33. **Quinin Abscesses and Eschars.**—Moreau comments on the number of severe abscesses and eschars developing after subcutaneous injections of quinin in the Macedonian campaign. Intramuscular injections seem to be less dangerous from this standpoint. Others have reported severe injury of the sciatic nerve from intragluteal injections of quinin. To be safe, the injection should be made three fingerbreadths outside of the posterior superior spine of the ilium, on a level with the spine.

35. **Simplification of Technic for Roentgen Examination of Digestive Canal.**—Bensaude and Terrey extol the advantages for Roentgen examination of finely pulverized barium sulphate in a 50 per cent. gelatinous vehicle. It forms a velvety cream without any tendency to precipitation of the metal for several hours or days.

36. **Isolated Tooth Sign of Inherited Syphilis.**—Sabouraud for five years has been studying a certain anomaly in the first large molars in the upper jaw, which he has found only in children and other persons giving a positive response to the Wassermann test. He hence regards it as a sign of inherited syphilis, and it often is the only sign to call attention to it. Normally, each cusp of a tooth corresponds to a root, but in the molars in question there seems to be a supernumerary cusp on the inside of the tooth. It forms a protuberance more or less pronounced, and he has discovered it often when the teeth otherwise seemed free from syphilitic stigmata. He calls it the *eminence mamillaire de la face interne des premières grosses molaires supérieures*, and relates instances

in which it gave the clue to specific and effectual treatment. His illustrations show teeth with this rudimentary cusp, with views of normal teeth and of the well known types of other syphilitic dental anomalies.

### Progrès Médical, Paris

*March 31, XXXII, No. 13, pp. 101-108*

37 Microbian Infections of the Scalp. (La teigne amiantacée d'Alibert, etc.) Gougerot.—p. 101.
38 Gas Gangrene. R. Dumas.—p. 102.

*April 7, No. 14, pp. 109-122*

39 Symptoms Following Injury of Both Median and Ulnar Nerves. M. Loeper and G. Giraud.—p. 109.
40 *Psychotherapy in Wartime. G. L. Duprat.—p. 113. To be continued.
41 No Dressings after Aseptic Operations. A. Chalier.—p. 116.
42 The Effects of the Nervous Strain of Trench Life. (Le cafard.) P. Voivenel.—p. 117.

40. **Psychotherapy in Wartime.**—Duprat states that the rôle of psychiatry has been singularly enlarged by the number and variety of mental pathologic conditions during the war. The war has also emphasized the importance of neurology, but he warns that while waiting for time to heal certain nervous affections there is danger of atrophy from disuse. The neurologic centers should be equipped for exercises and the physiologic play of body and mind. Reeducation is as important, often, as any operation. The concussions and commotions of the war usually aggravate or accelerate preexisting pathologic conditions. Consequently the symptoms induced are out of all proportion to the apparent cause. The latter reveals the extent of a latent ill, such as a brain tumor, sclerosis, tabes, degeneracy, progressive paralysis, etc. The mental confusion that follows shell shock soon disappears when the soil is healthy. He insists on the necessity for early correction of contraction and paralysis, before they become inveterate, and describes the means for this and other fields of psychotherapy.

### Correspondenz-Blatt für Schweizer Aerzte, Basel

*March 31, XLVII, No. 13, pp. 385-416*

43 *Gastroptosis and Gastropexy. E. Bircher.—p. 385.

43. **Gastroptosis and Gastropexy.**—Bircher lists the symptoms with gastroptosis as gastric discomfort and pains and constipation, the latter liable to entail nervous disturbances of all kinds, especially pains in various parts of the abdomen and particularly in the sacral region. Headache is also common, and lack of appetite; the loss of weight from inadequate intake of food may turn the scale in favor of the erroneous diagnosis of malignant disease. The pains in the stomach are worse during the day, especially when much on the feet, and they subside on reclining. The pain with ptosis is more to the left than with ulcer, as a rule, and it depends more on the quantity than on the character of the food. Bircher warns, however, that gastroptosis predisposes to ulcer, and may accompany it or cholelithiasis, stenosis of the pylorus, or myasthenia. Actual hysteric stigmata are rare with pure ptosis, but nervous disturbances are common. In women who have borne children, the ptosis is due to loss of elasticity in the abdominal walls and ligaments, and constipation dominates the clinical picture. In the virginal type, the tendency to ptosis is aggravated by pressure from corsets, etc., forcing down the organs below the diaphragm and thus dragging down on the esophagus, ligaments, vessels and nerves. Pain and vomiting are the main symptoms; the ptosis and the constipation are not very pronounced. This type benefits better from gastropexy than the maternal gastroptosis. Gastroplication, shortening the lesser omentum, gives good results at first, but then the omentum stretches and the previous condition returns. Gastro-enterostomy is absolutely contraindicated with gastroptosis. He tried it on a patient with supposed gastric ulcer, but the young woman vomited incessantly afterward and succumbed to inanition in two months. Necropsy confirmed the existence of two ulcers in the duodenum, but the stomach sagged down into the small pelvis, thus closing the gastro-enterostomy opening. In a second similar case he opened the abdomen, resected the gastro-enterostomy opening, and fastened the stomach in place, thus curing the patient completely.

He has applied gastropexy in 62 cases, and reports that 67.7 per cent. were cured and 20.9 per cent. improved. Only 9.6 per cent. failed to derive benefit, aside from 1.6 per cent. who had died. In 42 reexamined recently after over a year or more, only 4.1 per cent. were not improved or cured, outside of 2.6 per cent. who had died. Those who were not improved had had their disturbances so long that complete restitution was out of the question, and only this or that symptom was mitigated. In 6 cases he fastened the liver in place at the same time. When spasm of the pylorus was part of the clinical picture, he slit the pylorus lengthwise and sutured the lips together again crosswise. In the 11 cases in which this was done it proved a complete success. In 6 cases there was a complicating ulcer, and in 2 he resected the ulcer before the gastropexy and in 4 others applied gastro-enterostomy. He warns most urgently that in doing gastro-enterostomy, if there is the slightest tendency to gastroptosis, the operation should conclude with gastropexy. Gastroptosis predisposes further to the arteriomesenteric occlusion so dreaded by surgeons. In 3 of his cases gallstones complicated conditions.

He somewhat modifies Rovsing's technic for gastropexy. Rovsing draws the stomach out through a median incision and makes an interrupted suture in the serosa, parallel to the lesser curvature, and reaching up close to the pylorus. Then, parallel to this, other rows of sutures are taken, at intervals of 2 cm. The ends of the suture threads are brought out through the abdominal wall to the left. The abdominal incision is then sutured and closed with collodion. The ends of the suture material are tied over a glass plate covered with gauze. He scarifies both stomach and wall before taking the sutures. Bircher's modification consists in carrying the suture material around the right costal arch or directly under it through the skin, and he does not carry the middle and lower lines of sutures quite so far to each side. The ends of the threads are brought out at a distance of 4 to 3 cm. from their entering points, and are tied over glass drains wrapped in gauze. By this modification, the stomach is fastened in its proper place and shortened in length at the same time. Rovsing has a record of 163 personal cases and has reported 93 by other Scandinavian surgeons, the outcome being a complete cure or improvement in all but about 12 per cent., except for 4.8 per cent. who have died since.

### Gazzetta degli Ospedali e delle Cliniche, Milan

*March 1, XXXVIII, No. 17, pp. 257-272*

44 *Primary Cancer of the Peritoneum. B. Quarella.—p. 257.

*March 4, No. 18, pp. 273-288*

45 *Infectious Spirochete Jaundice. G. B. Bonini.—p. 273.
46 Vaccine Therapy of Recurring Staphylococcus Pustular Affection. (Sulla cosidetta malattia di Colles, Graves, Jaccoud.) P. F. Arullani.—p. 278.

*March 8, No. 19, pp. 289-304*

47 Symptoms from Foreign Body in Pleura. S. Gangi.—p. 299.
48 Necessity for Examining the Throat of Every Sick Child. A. De Blasi.—p. 301.

44. **Cancer of the Peritoneum.**—The two cases reported by Quarella were typical examples of diffuse malignant peritoneal epitheliomas. One patient was a man of 49 and the symptoms were those of abdominal cancer in general, with death a month after the first symptoms had attracted attention. The second patient was a young man, healthy until 1903 when digestive disturbances and enlargement of the abdomen with other symptoms suggested tuberculous peritonitis. He was tapped several times, and under medical treatment left the hospital much improved. He returned two years later with ascites and a pleural effusion, and again was transiently improved by paracentesis. On recurrence of trouble, laparotomy was done and the peritoneum found studded with nodules which seemed to form a primary miliary carcinosis. A course of Roentgen treatment was given and, contrary to expectations, great improvement followed and persisted for six years, with earning capacity restored. Then there was further trouble, and again benefit followed a laparotomy, the man returning to work for another year. A third laparotomy the following year showed the neoplastic nodules somewhat increased in size. After a period of improvement, severe abdominal pains and profuse ascites

followed. The young man died in 1916, thirteen years after the first symptoms. He had had seven laparotomies done, and his earning capacity had been maintained nearly to the last. Quarella says that he is unable to explain the long survival of over twelve years after the malignant disease had been diagnosed beyond question. The necropsy findings in both cases are described and are compared with those from similar cases in the literature.

45. **Infectious Jaundice.**—In Bonini's experience with what he calls icterohemorrhagic spirochetosis, he obtained little benefit from treatment with mercury or arsenic. Better results were noted with serum from convalescents and immunized goats, but only before the jaundice had appeared. After this stage the patients are able to produce their own protecting or immunizing substances. Hence treatment then is merely symptomatic, stimulating the elimination of bile and waste by drinking freely of alkaline waters and eating food that has not had the vitamins destroyed by boiling.

### Pediatria, Naples

*April, XXV, No. 4, pp. 193-256*

49 *Vaccine Therapy of Diphtheric Paralysis. S. Maggiore.—p. 193.
50 *Vaccine Therapy of Malta or Undulating Fever. G. Caronia.—p. 199.
51 *Hydrocele in Infants. R. Vaglio.—p. 212.
52 Monosymptomatic Form of Scurvy in Infant. S. de Stefano.—p. 227.

49. **Vaccine Therapy of Diphtheric Paralysis.**—Maggiore describes the encouraging improvement in a boy of 6 with paralysis of both legs and one arm, coming on about a month after recovery from diphtheria under antitoxin. The movements of the neck were also restricted, and the head drooped forward, but there was no pain. He was treated with electricity, massage and nux vomica, and was given injections of a vaccine made with an emulsion of diphtheria bacilli in diphtheria antitoxin inactivated at 55 C. The dose was 2 c.c. at a time, a total of 6 c.c. at intervals of a few days. The paralysis began to improve at once, and there were no symptoms of intolerance or anaphylaxis. The factors involved in the effect of this serovaccine must be those on which active immunity is based, as nothing else seems able to explain it.

50. **Vaccine Therapy in Malta Fever.**—In the eight cases in adults and children the benefit from the vaccine made by Caronia's method was marked, and no by-effects were noted on intramuscular injection. In two of the cases the vaccine was given intravenously; it then induced a moderate febrile reaction.

51. **Hydrocele in Infants.**—Vaglio calls attention to the frequency of hydrocele in infants with inherited syphilis, saying that it often seems to be the only manifestation of the inherited taint. In eighteen of the fifty-five cases summarized there was a history of syphilis in the family and in eleven it was probable, but in twenty-six cases there was nothing to suggest syphilis. The hydrocele in the scrotum causes no disturbance and usually subsides spontaneously.

### Policlinico, Rome

*April 1, XXIV, No. 14, pp. 437-471*

53 Thoracentesis for Hemothorax after War Wound of the Lung. L. Longo.—p. 437.
54 Importance of Laryngostomy for the Sequels of Wounds of the Larynx and Trachea. G. Ferreri.—p. 441.
55 False Teeth for the Soldiers. (Gli sdentati nell-esercito.) A. Perna.—p. 445.
56 Salvarsan and Its Substitutes in Abortive Treatment of Syphilis. G. Piccardi.—p. 448.

*March, Surgical Section No. 3, pp. 97-144*

57 *Mycosis of the Throat. (Studio clinico-sperimentale sulla cosidetta blastomicosi.) G. Basile.—p. 97. Commenced in No. 2, p. 88.
58 *Invagination of Movable Cecum and Appendicitis. O. Cignozzi.—p. 120.
59 *Operative Treatment of Primary Echinococcus Disease of the Lung. G. Mariotti.—p. 129.
60 Traumatic Hernia of the Brain. O. Tenani.—p. 142. To be continued.

57. **Blastomycosis of the Throat.**—Basile here concludes his long study of a case of blastomycosis of the throat in which he was able to cultivate from the lesion a fungus previously unknown in Italy. It resembles that of the oropharyngeal zymonematosis that has been described in Brazil.

58. **Ileus from Invagination of Movable Cecum.**—Cignozzi describes a case of ileus in a child of 12 for which chronic appendicitis seemed to be indirectly responsible. It maintained irritation which led to the invagination of the cecum in the colon. After appendicectomy, he took up folds in both cecum and colon to reduce them to normal dimensions and fastened the cecum to prevent its moving about.

59. **Primary Echinococcus Disease of the Lung.**—Mariotti reports a case in which he operated on the lung of a soldier for echinococcus disease. He emphasizes the advantages of his method of operating at two sittings. The lesion was in the lower lobe of the right lung. The man had had a great deal to do with dogs, and the radiogram confirmed conclusively the diagnosis. The contrast between the good general condition and the severe pulmonary affection aided in excluding tuberculosis. Spontaneous cure is exceptional, and local injection of drugs is contraindicated for various reasons. He obtained access to the lesion by resecting the seventh, eighth and ninth ribs, suturing the lung and pleura with a crown of stitches to the wall to prevent the retraction of the lung, and also outline the field of operation. It was tamponed and the skin sutured over this. The second operation followed two days later. No attempt was made to remove the cyst membrane in the lung as it was adherent and fragile.

### Riforma Medica, Naples

*March 17, XXXIII, No. 11, pp. 281-308*

61 *Italy in the Progress of Science. (Rivendicazioni italiche: tubercolosi.) A. Ferrannini.—p. 281.
62 Successful Anastomosis between Median and Brachial Nerves after Resection of Sarcoma. R. Minervini.—p. 284.
63 Factitious Affections Induced to Simulate or Aggravate the Results of War Wounds. A. Mori.—p. 288. To be continued.
64 *Traumatic Paralysis of Reflex Origin. P. Boveri.—p. 294.
65 Extrameningeal Manifestations of Meningococcus Infection. A. Ferrannini.—p. 295.
66 Ictero-Albuminuric Spirochetosis and Relapsing Fever. U. Gabbi.—p. 297.

61. **Italian Contributions to Progress of Science.**—Thumbnail sketches with portraits are given here of Italians who have advanced materially our knowledge of tuberculosis. The list includes Fracastoro, in the sixteenth century, who preached that tuberculosis was spread from man to man; Maffucci whose determination of the endotoxins of bacteria was the basis for production of tuberculin; Grocco and Bozzolo in 1893 and 1900 who preceded Poncet in describing tuberculous rheumatism and tuberculous stenosis of the pylorus; Forlanini, with artificial pneumothorax; Maragliano, with serotherapy of tuberculosis, and F. Durante who has been extolling since 1876 the value of iodin in treatment of tuberculosis. Barellai in 1853 and Castaldi five years later appealed to the authorities to found seashore and mountain sanatoriums for the tuberculous.

64. **Traumatic Paralysis of Reflex Origin.**—Boveri remarks that cases of paralysis and contracture of traumatic reflex origin are now encountered in every military hospital that cares for nervous affections. The diagnosis is easy but the pathogenesis is obscure. Prolonged disuse of the limb after the trauma is unmistakably one of the factors, interfering with the nutrition and elasticity of the muscles. This entails in time the trophic and vasomotor disturbances and the changes in the response to the electric current. These phenomena are comparatively transient and subside under proper treatment. But when the vascular apparatus is injured, the resulting lesions are practically permanent.

### Revista de la Asociacion Medica Argentina, Buenos Aires

*March, XXVI, No. 148, pp. 143-278*

67 *Echinococcus Disease of the Liver. (Le kyste hydatique multivésiculaire du foie.) F. Dévé.—p. 143.
68 *Injection of Phenol in Treatment of Hemorrhoids. E. Escomel.—p. 167.
69 *Varicocele in the Female. C. A. Castaño.—p. 179. Commenced in No. 147, p. 76.
70 *Gastric and Duodenal Ulcers. R. Finochietto.—p. 210.
71 *History of Bubonic Plague. A. M. del Pont.—p. 242. To be continued.
72 Mercury Cyanid Intravenously in Treatment of Dysentery. Varsi.—p. 277.

67. **Echinococcus Disease.**—Dévé affirms that, in the young, hydatid cysts, even very large ones, have no daughter cysts in from 90 to 100 per cent. of the cases. This is because the echinococcus disease is of comparatively recent date, and the cyst has not been subjected to as many vicissitudes as is the rule in older persons whose affection is of longer standing. For this reason the echinococcus cyst in the young is round and elastic, and cholemia is rare. Spontaneous suppuration is exceptional, but the cyst in the liver may rupture into the peritoneum. The immediate results are mild, but the echinococcus disease develops secondarily in the abdomen. A hydatid cyst should never be punctured but should be operated on without any delay. Physicians should strive to diagnose these cysts in children and young people, especially in countries where they are rare. It is more than probable that many cases of echinococcus disease in adults date from childhood. The liver is involved in about 75 per cent. of all cases, and the lung in 9 or 10 per cent. The gravity of the disease left to its natural evolution and the relative mildness with an early operation should be impressed on the public, and parents instructed to watch for any bulging of the abdominal wall.

68. **Treatment of Hemorrhoids.**—Injection of a 20 per cent. solution of phenol in equal parts glycerin and distilled water cauterizes and obliterates the hemorrhoid. The phenol acts as an anesthetic, so no other anesthetic is required. From two to six drops is the capacity of each hemorrhoid, as a rule, and the procedure is within the reach of any physician. Much inflammation contraindicates this method of treatment as it would prove too painful. The patient can return to his business in a few hours afterward. This method is by all means the best nonsurgical measure at our command, Escomel reiterates. He gives an illustration of the speculum, small clamps, and bent syringe with straight or bent tips he uses for the purpose.

69. **Pelvic Varicocele.**—The first part of Castaño's article was reviewed in these columns, April 14, p. 1151. He appeals for causal treatment of disturbances which are too often labeled hysteria and disregarded, when correct treatment would relieve the women from years of discomfort, pain and secondary nervous disturbances. The predisposed are those with slightly deficient thyroid functioning and a tendency to congestions in general. The four main symptoms are dysmenorrhea of the ovarian type, menorrhagia, dyspareunia and serous or watery vaginal discharge. The pain is mostly a sense of oppression in the abdomen, a dragging down sensation, increased by standing, walking, dancing, and relieved by reclining. The pains grow worse as menstruation approaches while the vaginal discharge becomes profuse. As menstruation sets in the pains are relieved. Dyspareunia is also pronounced, the pain during coitus being probably due to varicose periphlebitis involving the nerves. There is also liable to be bladder and rectum tenesmus, with chronic constipation. The varicose enlargement of the veins can be palpated better as the patient stands. Those in the broad ligament are most often affected, especially on the left side. Symptoms from deficient thyroid functioning form part of the clinical picture. Women with this tendency to congestion in the pelvis are often multiparas. The varicocele may be mistaken for chronic appendicitis and metritis; although the discharge with the latter should differentiate it. Left untreated, the repeated congestions and the compression from the varicocele are liable to injure the ovaries and set up inflammation in the pelvis. Treatment should aim to reduce the tendency to congestion, and for this he gives thyroid treatment, preparing the patient for it with a course of alkalines, 10 or 20 gm. a day of sodium bicarbonate, taken with the meals, for three or four days, with some alkaline mineral water. He gives thyroid tablets one every other day for a week at bedtime, then one every day and then two every day for the third week, and then rests a week. If this treatment brings the expected benefit, he continues with larger doses, regulating the habits to ensure a tranquil hygienic life, avoiding meat, as this, he says, "attacks the thyroid." A supporting abdominal band is often useful.

70. **Gastric and Duodenal Ulcers.**—Eighteen illustrations accompany this analysis of forty-six cases of gastric or duodenal ulcer given operative treatment in Finochietto's service within the last two years. The past history seemed to be more instructive than the naked eye or microscopic aspect of the lesions in the ulcer and cancer cases; none of the cancer cases had the long pathologic past of the ulcer cases. A cholecystogastrostomy was done in one case of duodenal ulcer, and the outcome was as good as after simple gastro-enterostomy. Necropsy in one case several months after a gastro-enterostomy showed that the mucosa of the stomach had evidently been injured by the clamps, the marks left by them being still visible, with loss of substance.

71. **History of Bubonic Plague.**—Del Pont remarks that the ancient writers on the plague, wishing to make their descriptions more moving, exaggerated greatly, certain chronicles giving the numbers of the dead in figures double or triple the total number of inhabitants of the place at the time. Others copied into their descriptions accounts from other epidemics which had little if anything in common with them. In this installment of his study of the plague through the ages, he brings it down to the eighth century.

### Semana Medica, Buenos Aires

*XXIV, No. 3, pp. 57-84*

73 Bimalleolar Fracture from Traumatic Adduction. M. Jorge, Jr. —p. 57.
74 Phlegmon of the Larynx; Four Cases. A. Quadri.—p. 67.
75 Lymphocytosis in Syphilis. C. P. Mayer and A. C. Gourdy.—p. 79. Continuation.

*No. 4, pp. 85-120*

76 *Surgery of the Pituitary Body. E. V. Segura.—p. 85.
77 Lymphocytosis in Syphilitics. C. P. Mayer and A. C. Gourdy.—p. 113. Continuation.

76. **Surgery of the Pituitary Body.**—Segura's long study of this subject is illustrated. He urges prompt removal of a tumor in the pituitary body as soon as it is diagnosed, and reports his experience in five operative cases. The preferable mode of access is the inferior nasal, and the only difficulty is the possibility of anomalies in the sphenoidal sinus which make it hard to locate the point where the dura mater over the sella turcica should be opened. The results were highly satisfactory in his five patients. In one the operation revealed syphilitic lesions in the sphenoidal sinus and the operation was interrupted and specific treatment applied, with complete subsidence of all disturbances in time. Two of the patients who were nearly blind recovered practically normal vision after removal of the pituitary tumor. Menstruation had been suspended for two years in one case but reappeared after the operation, the dates corresponding with the date of the latter during the six months since. These seem to be the first operations on the pituitary body in South America.

### Mitteilungen a. d. med. Fakultät der k. Univ., Tokyo

*February, XVI, No. 3, pp. 445-605. In German*

78 *Hypertrophy of Right Ventricle as Consequence of Paralysis of the Diaphragm. (Hat die Zwerchfellllähmung die Hypertrophie der rechten Herzkammer zur Folge?) K. Kure and T. Hiramatsu.—p. 445.
79 *The Tonicity of the Diaphragm and the Splanchnic Nerves. (Zwerchfelltonus und Nervi splanchnici.) K. Kure, T. Hiramatsu and H. Naito.—p. 483.
80 *Physiologic Importance of the Pericardium. M. Yamada.—p. 527.
81 *Functions of the Thymus. (Ueber die Funktionen der Thymusdrüse vom Standpunkte ihrer Ausfallserscheinungen.) Y. Tongu. —p. 539.

78-79. **Paralysis of the Diaphragm and Its Effect on the Heart.**—Kure and Hiramatsu conclude from the experimental research reported and their clinical experience that the hypertrophy of the right ventricle observed so often in beriberi, along with paralysis of the diaphragm, is secondary to the latter. They emphasize that the movements of the diaphragm are regulated by the phrenic nerve, while its tonicity is determined by the sympathetic nervous system, and consequently in studying the functioning of the diaphragm the excursions and the tonicity should be investigated separately.

80. **The Pericardium.**—Yamada removed more or less of the pericardium from the hearts of dogs but the heart seemed to adapt itself to this and no apparent injury resulted.

81. **The Thymus.**—Tongu has done considerable work in experimental transplantation of the thymus, and now reports

research on the disturbances which followed thymectomy in forty dogs from ten litters. Four plates accompany the article, and the details of the various experiments are tabulated. He warns that suppuration of the wound and intercurrent pneumonia, etc., may induce disturbances liable to be mistaken for thymus deficit symptoms. He was unable to detect any influence from the thymus on the weight of the body nor on the production and destruction of blood corpuscles. After thymectomy the alexin action seems to be lacking. But it is a question whether the thymus shares in the production of alexins or merely produces some substance which promotes the alexin action of the blood serum. No influence from the thymus on the blood pressure was apparent, and no difference in callus production between the normal and the thymectomized dogs.

### Russkiy Vrach, Petrograd

*XVI, No. 1, pp. 1-24*

82 Semicentennial of Medical Mutual Aid Society. N. Y. Chistovich.—p. 1.
83 *Reflex Pain after War Wounds of Peripheral Nerves. (Causalgia Weir-Mitchell'a.) A. E. Yanishevsky.—p. 8.

*No. 2, pp. 25-48*

84 Suggestions for Improving Surgical Work on the Firing Line. N. N. Petroff.—p. 25.
85 Treatment of War Fractures of the Humerus. A. P. V. Syanozhentsky.—p. 31. Commenced in No. 1, p. 13.
86 *Resection for Cancer of the Stomach. B. K. Finkelstein.—p. 35.
87 Case of Milky Ascites with Leukemia. V. V. Trophimoff.—p. 41.
88 *Alcohol as Disinfectant and Insecticide. X. D. Arkhipia[illegible].—p. 43.

83. **Reflex Pain from War Wounds.**—Yanishevsky says that causalgia must be treated by removal of the cause, of course, but that this has to be followed usually by other measures, and chief among these is hydrotherapy, wet packs or compresses. Galvanic baths may also prove useful, and massage with passive exercises are indispensable if there is danger of ankylosis of the joint. Psychotherapy is a valuable adjuvant, not in the form of ignoring the patient's complaints, but in isolating him from everything liable to annoy or worry him, and impressing on him confidence in a complete cure in time if he will be patient under his puzzling affection. Four cases are described in detail; in one a number of operations had been done, but the causalgia constantly returned after a transient period of improvement. Even injection of alcohol to block the nerve gave only transient benefit. Cestan and Descomps have reported excellent results from Roentgen exposures in recent cases. Leriche has also cured cases by peripheral sympathectomy, that is, denuding the corresponding artery over a certain stretch by removing its sheath of network of sympathetic fibers. But even this is not always successful. Massary applied it in a case with only partial success and this only transient.

86. **Cancer of the Stomach.**—Finkelstein advocates resection of the stomach, and reports twenty-three cases of clinical recovery after resection of the malignant growth, but in only two of the cases are the patients known to be living five and eight years later. Eight others were in good health at last accounts after intervals of from one to three years. Eleven have succumbed to recurrence since, the survival being from six months to three years. The outcome in the other cases is not known. Seventeen patients succumbed to postoperative peritonitis or other complications. Less than a third of all his gastric cancer cases were in an operable condition when first seen. He compares the clinical data in his cases with those published by Ochsner, Mayo and others, totals of 1,290 and 2,063 cases. It seems from the figures cited that in 28 per cent. of all the fatal cases of cancer the malignant disease is located in the stomach. In about 50 per cent. of the cases the cancer is at the pylorus, and in about 10 per cent. on the site of an ulcer. In about two thirds of the cases the tumor can be palpated. In about 2 per cent. of the cases of gastric cancer the patients are under 30, but in only one of his forty operative cases was the patient under 30, namely 28. She had had symptoms for seven months, and died from peritonitis. He advises Billroth's second method as the preferable technic, but even with this the operative mortality ranges from 9 to 67 per cent. and the permanent recoveries from 0 to 25 per cent.

88. **Alcohol as Disinfectant and Insecticide.**—Arkhipiants comments on the contradictory statements in regard to the sterilizing power of alcohol. Koch denied that it had any sterilizing power as it did not kill anthrax spores left in it for 110 days. On the other hand, Fürbringer, Frank and others extol its sterilizing power, but differ widely in the concentration deemed most effectual. Arkhipiants applied it in sterilizing articles in the so-called Japanese sterilizers, and found that, when used instead of solution of formaldehyd, and in quantities four or five times larger than the usual amount of solution of formaldehyd, germs were killed as effectually. He found alcohol of 70 or 80 per cent. strength best adapted for the purpose. The germs used in the tests were cholera vibrios, typhoid and colon bacilli and staphylococci, all on silk threads. They were all killed with the alcohol fumes exactly as in parallel tests with solution of formaldehyd. He does not give any further details of his tests in this preliminary communication, but says he will publish them in another article in the near future.

### Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

*February 17, I, No. 7, pp. 433-512*

89 *Gritting the Teeth as Sign of Adenoids. (Tandenknarsen.) C. E. Benjamins.—p. 444.
90 Favus not due to Achorion Schönleini. D. Muijs.—p. 449.
91 Influence of a Localized Focus in Brain on Conception of Figures, Space and Time. W. van Woerkom.—p. 455.
92 Alcohol and Tuberculosis. D. van D. B. Andreae.—p. 462.
93 Spontaneous Healing of Ruptured Spleen. H. Jonker, Jr.—p. 467.
94 Acute Ileus: Two Cases. (Acute darmafsluiting.) W. A. Weisfelt.—p. 469.

*February 24, No. 8, pp. 513-592*

95 *Simple Means to Make Graduated Pipets for Serologic Reactions. M. Van Riemsdijk.—p. 517.
96 *Classification of Goiters. O. Lanz.—p. 533.
97 Taenia Nana. C. L. de Jongh.—p. 541.
98 Improved Olfactometer. C. van Dam.—p. 547.

*March 3, No. 9, pp. 593-688*

99 The Percentage of Accidents and the Factory Physician. J. A. Korteweg.—p. 597.
100 Isolated Dislocation of the Cuneiform Bone of Wrist. (Afzonderlijke ontwrichting van het os triquetrum.) N. Voorhoeve.—p. 615.
101 Tumor in the Spine. (Gezwel van de wervelkolom.) H. Bolten.—p. 619.

89. **Gritting of the Teeth in Connection with Adenoid Vegetations.**—Benjamins states that in his experience with 250 cases of adenoids in India and 526 at Utrecht, as also in the experiences of others, comprising a total of 1,544 adenoid cases, a tendency to grit the teeth was manifest in from 25 to over 40 per cent., an average of 34.1 per cent. In his own experience the average was 37.2 and 34.6 per cent. In his 776 cases there was snoring in over 60 per cent.; enuresis in 29 per cent.; aprosexia in 34.6 per cent., and disturbances in hearing in 42.7 per cent. In 153 operative cases of adenoids, the gritting of the teeth stopped after the removal of the adenoids, and in fourteen it became much less, but it persisted unmodified in fourteen. Examination of 1,654 schoolchildren showed gritting of the teeth in 13.6 per cent. The number of adenoid cases among them was not known, but he is confident that the majority of the teeth gritters will be found to have adenoids. In a series of 115 teeth gritters examined for affections other than adenoids, all but two were found to have adenoids. In 10 of the children the teeth gritting was the only anomaly to attract attention, but a large adenoid was discovered in four.

95. **To Make and Graduate Pipets.**—Riemsdijk gives minute directions for making pipets from a glass tube, filing it into the desired lengths with a three-cornered file, roughening the surface with fine sandstone, and marking off the intervals with a ruler and blacklead pencil, touching over each mark afterward with spirit varnish which makes them practically indelible. She slips the top of each pipet into a segment of rubber tubing to render it easier to handle. By oiling the file it works better on the glass. She also describes ways and means to make and calculate dilutions, suspensions, etc., as she has found most convenient in her work as assistant at the Hygienic-Bacteriologic Institute of the University of Amsterdam.

96. **Classification of Goiters.**—Lanz has had experience with goiters both in Switzerland and Holland, and emphasizes that classification based on the pathologic anatomy is the guide to treatment. In Holland they seem to be of two main types, the atoxic and the toxic. The atoxic group includes the diffuse parenchymatous, diffuse colloid and the circumscribed, nodular, colloid or cystic forms. The toxic type includes the diffuse thyreotoxic, and primary Basedow, and the circumscribed thyreotoxic and secondary Basedow. He describes each type in its clinical manifestations to aid in diagnosis, and warns against abuse of iodin in treatment. It seems strange, he remarks, that nodular goiter has such a toxic action. Possibly the circumscribed nodule serves as a constant irritant for the thyroid. In course of time it may induce a secondary hyperthyroidism. The toxic symptoms do not come from the nodule itself but from its irritated environment. This may set up a vicious circle, but there is no exophthalmos, as a rule, although the cardiotoxic and neurotoxic symptoms are pronounced. The only effectual treatment is the operative, and it need not be extensive; amputation of one side is enough. Bleeding inside the goiter is rare in Holland, but not rare in Switzerland where he had several times to do an emergency thyroidectomy on account of the rapid enlargement of the thyroid from hemorrhage.

He says of the diffuse toxic goiter that it is practically a rudimentary exophthalmic goiter, usually of a vascular type. This is the form observed in telephone girls and teachers, and he has noticed it particularly frequent in doctors' wives, especially country doctors. The country doctor's wife, he remarks, helps in his work, shares his cares and his irregular, hurried mode of life. The thyroid in men is much less sensitive to psychic trauma than in women and girls. In treatment of this form, rest is the first and last word. Worry and emotional stress must be warded off. Sometimes a change of environment is necessary. Phosphorus preparations and arsenic, with bromids are the drugs called for.

Iodin in the cardiotoxic form may have a favorable action in minute doses, but it must not be forgotten that it is a two-edged sword. The dangers from it with all toxic goiters are greater than any eventual benefit. By operative treatment, usually amputation of the most vascular lobe, much time will be gained. Actual pronounced exophthalmic goiter occurs almost exclusively in women, but when it does affect a man the prognosis is much graver. Iodin, thyroid and roentgenotherapy have done more harm than good in true exophthalmic goiter, but resection of the thyroid gives brilliant results. To be safe, we must not let ourselves be tempted to resect too much. Only the lobe most intensely vascularized should be resected or the superior thyroid arteries ligated, as the first step. Iodin triumphs in the cases of diffuse parenchymatous atoxic goiter, either by the mouth or rubbed into the gland in a salve with one part iodin to ten parts potassium iodin and 100 parts petrolatum, but always very cautiously, and under medical supervision. The goiter may increase a little under the influence of the iodin, and it should be suspended then. But these are the cases that respond favorably to iodin. Iodin may help also in the atoxic, knobby, diffuse colloid form, but if no benefit is apparent in four or six weeks it had better be dropped. The operation for this type is unilateral resection, leaving a good amputation stump to be sure to spare the recurrent nerve and parathyroids. The atoxic nodular colloid goiter is the endemic type, and to give iodin with this form, he declares, is malpractice. It does not act on the diseased tissue but only on the still sound tissues. The only treatment here is operative, enucleation or resection or a combination of both.

### Ugeskrift for Læger, Copenhagen

*March 8, LXXIX, No. 10, pp. 349-408*

102 *Eye Disease and Other Disturbances in Infants from Deficiency in Fat in the Food. (Lidelser hos Smaabørn opstaaet paa Grund af Fedtmangel: Xerophthalmia et Dystrophia alipogenetica.) C. E. Bloch.—p. 349. Commenced in No. 9, p. 309.

103 *Case of Veronal Poisoning. F. Fog.—p. 370.

102. **Fat Deficiency Disturbances in Infants.**—Bloch mentions that although xerophthalmia is regarded as a very rare affection, yet he has had forty cases in the last five years at Copenhagen. In five cases there was xerosis alone, in twenty-seven bilateral keratomalacia, and in seven only in one eye. In many of the cases the necrosis of both corneas was total. There was ulceration in the cornea in nearly every case, prolapse of the iris in a number, and displacement of the lens in a few. The little patients were all from a few months to over a year old. Some died from their atrophy and its consequences, some from extension of gangrene from the ulcerating cornea; others recovered. The children presented marked atrophy or dystrophy, the tissues feeling abnormally soft and doughy, edema masking the emaciation, or they showed merely weakness and pallor, but all were backward in development and the skin was dry and dull, scaling off in fine scales. The children all lay quiet and apathetic, and did not like to be disturbed even to be fed, but did not complain if left in peace. The hemoglobin was down to 30 per cent. in some, and was never above 80 per cent. A peculiar susceptibility to infectious processes was evident in the common rhinitis, otitis, furuncles, gangrene or pneumonia. Diarrhea of alimentary origin was frequent.

By exclusion of syphilis, myxedema and other constitutional diseases, Bloch traced this entire set of symptoms to the food the children had been getting; through all the different kinds of artificial feeding ran the evidence of lack of fat. Lack of vitamins may have cooperated, but the exceptionally fat-poor food explains alone the disturbances noted. In nine other cases of xerophthalmia that have been published in Denmark, the preceding artificial feeding had been of this same character, lacking in fat or albumin or both. The majority of Bloch's cases date from the years the war has been in progress; thirty-eight came from rural districts and only eleven from the city. The severe rural cases had all been fed on centrifuged (separator) milk, and this class is the one that has increased so materially in the last year. The parents give the cheapest food, and the cheapest contains the least fat. The disease appeared toward spring, like rachitis, showing the influence of lack of fresh air and sunshine. Treatment consisted in putting the children on breast milk, with local treatment of the eyes. The older children were given milk mixtures besides, and all got teaspoonful doses of cod liver oil. If the children improved under this treatment, he paid no attention to the diarrheic stools, increasing to two or three teaspoonfuls a day. Only a few failed to tolerate the cod liver oil.

He gives details of several cases, with illustrations, many of the children being left blind in one or both eyes. Mori has described in Japan a similar eye affection which may occur in epidemic form in times of famine, and which yields to cod liver oil. Chicken livers and eel fat have long been used as domestic measures against it. Mori calls it "hikan," and states that children from 2 to 5 are affected with this xerosis of the conjunctiva and keratomalacia, terminating often in blindness. He had 714 cases in 1899; 313 in 1900, and 400 in 1901. The disease subsides in two or three weeks under cod liver oil without other change in the food. Other fish oils are equally effectual, and the affection is not encountered among fisher families. His communication was published in the *Jahrbuch für Kinderheilkunde*, 1904. It confirms the view that a deficiency in fat is responsible for the whole set of symptoms. Bloch adds that it seems to be some special lipoid or lipoids which are involved and which are supplied in cod liver oil, but not in vegetable fats. In conclusion he warns that the true eye trouble is frequently masked by conjunctivitis, and that possibly many instances of blindness and leukoma in adults are due to unrecognized xerosis in infancy. The whole trouble is easily cured if taken in time by feeding with breast milk and cod liver oil, or the latter and sweet whole milk.

103. **Cure of Veronal Addiction.**—Fog had a patient who was much debilitated from her constant use of veronal. He gradually substituted antipyrin salicylate for the veronal in the powders she was taking, until she was getting no veronal at all. By this means she was weaned completely from the drug without her knowledge and without discomfort.